THE IRON AGE

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When Steel Was Young

How the Warehouseman of Seventy Years Ago Helped to Develop Our Domestic Iron and Steel Industry

IT is about seven o'clock on a fine June morning in the year 1855. The Belt Line horse-car has just discharged two high-hatted and frock-coated passengers in front of a two-story building which bears the imposing sign: *"Dealers In and Importers Of Iron and Steel Of Every Description."*

We cannot overhear their conversation as they mount the stairs to the second floor office, but since they have a copy of *The Hardware Man's Newspaper* (the name under which THE IRON AGE was first issued) we feel safe in assuming that they are discussing the new method of making steel just patented by an Englishman, Henry Bessemer. It is possible that they are commenting on the opening of the new ore mines in the Lake Superior district, but this was not considered of great moment seventy years ago and it is more likely that they are thinking about the possibility of selling more steel in place of wrought iron.

In the office there is no rattle of typewriters, no clatter of adding machines, no ring of telephone, though the clerical staff have been in their places half an hour. From the bookkeeper's stool comes the steady

The "elegant iron warehouse" of Mr. John B. Wickersham at 312 Broadway, New York, as it appeared in 1855, was at once "a handsome specimen of the work turned out and a splendid example of the tasteful appointments of a Broadway store"

NOT an artist's conception of sandwich-men patrolling lower Broadway in the interests of halters and chain snaps, but a reproduction of one of the early advertisements in THE IRON AGE. *Notice that even at that date the consumer is urged to buy through the jobber*

scratching of a steel pen. The office boy is packing letters in a pile, preparatory to copying them in the letter-press.

All business was transacted by written letter seventy years ago. At the time of which we write the first Atlantic cable was being laid, the telegraph was in the early experimental stages and travel was so slow and difficult that letters were the life-blood of business.

Let us look over the shoulders of our two partners while they read the morning mail. Here is an order for bars and rods from a tool manufactory in Connecticut to be sent "with all possible dispatch." Next comes a request for a price upon a goodly quantity of "steel crinoline wire, flattened, tempered, covered and glazed." A cooperage in Jersey asks that its order for hoops be "hastened to the utmost." And then a notice from the Cambria Iron Co., advising that in addition to "iron rails of 50 and 55 lb. to the yard" it is prepared to take orders in limited quantity for steel rails. A letter from England notifies of a price increase in Scotch and Yorkshire iron. From a church in Pennsylvania comes a request for advice on bell metal.

Also, there are offers of flats and squares and sheets from English iron works—offers which will be accepted by the next packet boat, for in those days the warehouseman must needs carry a larger stock to take care of his customers on account of the slowness and infrequency of shipments.

Then, too, there is the difficulty of determining what goods may best be imported and those which may profitably be purchased from the new mills which were springing up all over the eastern states as far north as Buffalo. So young was the industry that many manufacturers themselves imported a portion of the articles which they sold, in order to take care of buyers who insisted upon "foreign quality." All through the advertisements of those early days runs the thread of a quality guarantee, "*warranted equal to any imported article.*"

The manufacture of iron was, of course, fairly well established here even before the Civil War, though as late as 1865 there were articles in the New York newspapers advocating the cessation of iron making activities in the United States and closer attention to agricultural pursuits "for which the land was fitted." But the steel industry was young and it had a hard time in getting a foothold here. Tariff protection was forthcoming, despite the almost frantic efforts of Free Traders, who loved to theorize at the expense of another's purse.

But a tariff was not enough to protect the infant industry. There was a firmly established idea that foreign steel was far superior to anything we could make at home. Unless that idea could be overcome, the chances for a successful steel industry looked very slim. And here it was that the jobbers and warehousemen came to the rescue. They tried the domestic products, found them good and carried them in stock.

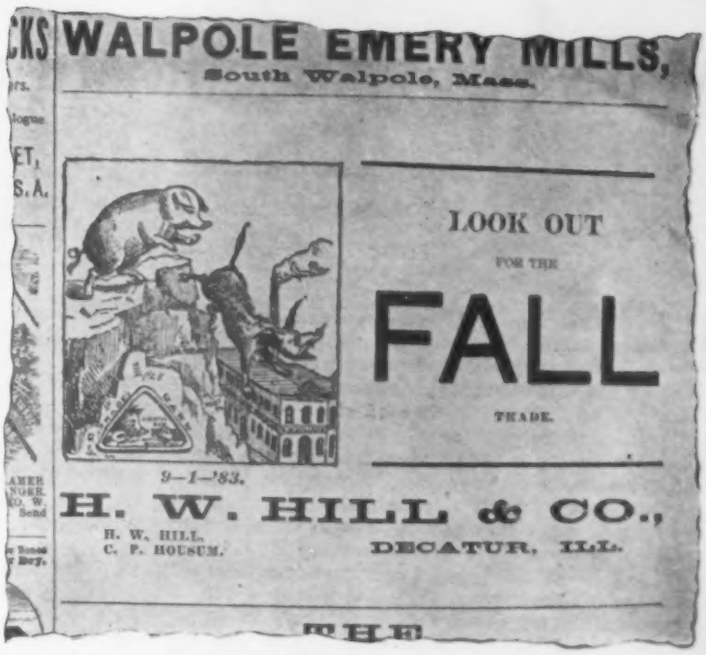
Customers wishing quick deliveries found great advantage in using home-made steel. Gradually the superstition of foreign supremacy was overcome. Of course the custom of advertising tools made from "the finest Swedes steel" or cutlery of "the famous Sheffield steel" has not been entirely outgrown even today, but during the ten years from 1855 to 1865 the jobbers, who held the bulk of the trade in their hands, rendered a great and lasting service to the youthful steel industry by advocating the use of American-made steel wherever possible.

Though larger quantities of iron and steel had to be carried in stock during the early days of the iron and steel trade, on account of slow shipments from the mills, there were not so many sizes and shapes to be kept on hand as is the case today. One prominent New York jobber whose firm has been in business for more than half a century states that the proportion of stock to total business done in money probably runs about the same today as fifty years ago. But, he adds, "There is no need for this to be the case . . . for if the standardization of sizes could be carried out in the manner contemplated, the jobber could very materially reduce the investment which he has to keep on his warehouse floor."

When iron and steel warehouses were first opened in this country, the convenience was so readily recognized that customers came direct to the warehouse and dickered for the material required. It was not until some years later that the iron and steel salesman was regarded necessary to keep up a respectable sales volume. A much larger proportion of the total business was done on a cash basis in the "good old days," for there were no commercial credit agencies from whom ratings could be obtained and the banking system was not so well organized as is the case today. To those companies deserving and asking for credit, terms were about the same as those in vogue today.

Prices were probably less stable than the quotations of 1925. "Dickering" was a national habit—per-

THE pig which is seen tumbling off the cliff at the right is supposed to refer to pig iron, if we read this illustrative advertisement aright. Such delicate, humorous touches were not infrequent in the advertising of the seventies and eighties



haps a national pastime—and the prices given in the early issues of THE IRON AGE may have been shaded more frequently than is the case nowadays. In the market columns of the sixties there may be found frequent references to "good brands of Scotch" which referred, however, to pig iron from the Caledonian furnaces.

A goodly part of the iron trade was in wrought iron, as the illustration on the previous page will indicate. According to an early description of the process for making wrought iron fences, railings, etc., "it is so woven together by means of powerful machinery that any given pattern may be followed with the same ease as upon a piece of embroidery. An enumeration of the uses to which this patented process applies includes gratings, verandahs, balconies, furniture of all kinds, bedsteads, statuaries, settees, fountains, hat-stands and all manner of iron work."

Fully three-fourths of the early advertisements referred to iron or iron products—and as late as 1865 the volume of steel production was so small that it was not considered worthy of attention from the United States Census Bureau.

The first jobbers were really importers, for only a negligible part of their trade consisted of American iron. Then came the period when the functions of jobber and importer were merged. The peak of importations of iron and steel came in 1873 and from that time, with but few interruptions, the domestic industry forged to the front and took possession of the business which was its own by economic right.

The most notable change which has taken place in regard to the type of materials carried in stock is the development of the structural steel business. The demand for rounds and squares and flats has grown, of course, and there are some items which are no longer carried in such large proportion—hoops, for instance, have been much affected by the prohibition amendment.

The jobber has shown an increasing tendency to specialize or concentrate upon supplying certain trades in which he possessed a special knowledge or acquaintanceship. There are many jobbers who do not carry a structural steel stock today. Many iron and steel warehouses which used to do a heavy hardware business have dropped this branch entirely. There are even instances where an iron and steel jobber for many years carried a full line of shelf hardware, but few instances of this sort are seen today.

Asked whether the conflict between some of the steel mills and certain jobbers in regard to the taking of mill orders direct was a modern development of the jobbing trade, one leading New York jobber said: "As far back as I can remember—and I can remember nearly fifty years ago—the mills have always gone after small orders when business was slack. The present condition is nothing unusual. It has existed a great many times before and may happen again. When the mills need business they go after it, and sometimes the jobbers feel that they are being treated unfairly.

"But some of the old mill practices have been discontinued—some that were far more disconcerting and damaging than those which are troubling the trade today. I remember a certain mill salesman who always made a practice of coming into this territory and selling direct to the consumer all the sheets he could unload. Then he would come around to us and solicit our order. Not knowing that the consumers who would normally buy our goods were covered by sales which he had just made, we would load up on sheets. A few days later we would discover the true state of affairs and start seeing red. But he worked that same trick on dozens of jobbers in various parts of the country before the practice was stopped.

"What do I think of the future of the jobbing trade? Well, I think that fifty years from today the jobbers will probably be doing just about the same proportion of business they are doing today—if not more. The mills in this industry realize that the function of the jobbers is just as necessary today as it was fifty years ago, though a far smaller part of the total volume of business comes through the jobber's hands today."

A gasoline-engine driven welding set for use where electric power is not available has been added to the line of the General Electric Co., Schenectady. This outfit consists of a standard WD-12 welding generator driven by a Buda engine, all mounted on wooden skids to the line of the General Electric Co., Schenectady. This is a Buda model WTU, and is rated at 22.5 hp.; at 1400 r.p.m. the actual bhp. is 33. The new outfit is being marketed complete with all accessories.

The Republic Rolling Mill Corporation, recently incorporated to operate the former bar iron plant of the Republic Iron & Steel Co. at East Chicago, Ind., has opened offices in the Westminster Building, 110 South Dearborn Street, Chicago.

Mill Scrap Specifications Submitted

Standardization and Simplification Leading Topics at Purchasing Agents' Meeting—Revolutionary Change in Coal Buying Recommended—Dependence on Trade Papers

TENTATIVE iron mill scrap specifications and a uniform purchase contract for iron and steel scrap were among important proposals which were submitted at the tenth annual convention of the National Association of Purchasing Agents, which was held at the Auditorium, Milwaukee, May 25 to 28 inclusive. A standard contract for the purchase of conveying equipment was acted upon favorably. Throughout the sessions, which were largely attended, standardization and simplification were urged, both in addresses and in discussion. According to a statement by H. R. Coleman, Division of Simplified Practice, Department of Commerce, in Washington, fully ten billion dollars a year could be saved through simplification and standardization. Caution lest standardization be carried too far was recommended by Dr. John A. Mathews, vice-president and metallurgist, Crucible Steel Co. of America, New York.

That the elimination of waste in industry has a definite relationship to stability of prices was indicated by revolutionary changes in coal-buying methods recommended by Mark Kuehn, National Malleable & Steel Castings Co., Cleveland. He proposed that purchasing agents refuse to buy consignment or "distress" coal, which has such a demoralizing effect on market conditions, and, furthermore, that they contract for at least one-half of their normal yearly requirements of coal, in the interests of stabilizing coal output.

A large part of one session of the convention was devoted to the consideration of current business conditions. In another session it was brought out that an overwhelming majority of purchasing agents faithfully consult the trade papers in their fields.

The registration at the convention was approximately 1000. The "informashow" embraced 140 separate exhibits of machinery, equipment and materials.

Iron Mill Scrap Specifications Submitted

TENTATIVE scrap specifications for iron rolling mills, embracing 24 different classifications, published on page 1627, were submitted at an iron and steel conference as the joint work of B. L. Verner, Interstate Iron & Steel Co., Chicago, and E. W. Krueger, Union Bed & Spring Co., Chicago. These specifications, which will be considered by the Iron and Steel Committee of the association during the coming year, are intended to supplement the other scrap specifications adopted by the association and last January submitted at a meeting of all interested parties held at Washington under the auspices of the United States Bureau of Standards. Those specifications were confined to scrap for use in blast furnaces, scrap for use in basic open-hearth furnaces, low phosphorus and low sulphur scrap for use in acid open-hearth furnaces, scrap for use in electric furnaces, scrap for use in gray iron foundries and scrap for use in Bessemer converters.

Attention was drawn by H. C. Miller, American Rolling Mill Co., Middletown, Ohio, to conflict between the scrap specifications of the purchasing agents' association and the specifications of the American Railway Association, especially so far as they refer to No. 1 heavy melting steel. In this connection, Frank Parker, Briggs & Turivas, Chicago, stated that the division of purchases and stores of the American Railway Association, at a recent meeting at St. Louis, voted to retain its specifications without change. Mr. Miller emphasized the necessity for widespread adoption of the scrap standards of the purchasing agents. During a recent investigation he found that 13 different kinds of scrap were being used in 13 steel works as heavy melting steel, and this apparently was not due to any fault on the part of dealers but to the necessity of meeting the individual requirements of the various plants.

Purchasing agents were urged to use more care in preparing their scrap accumulations for sale to dealers, by E. G. Howell, Hickman, Williams & Co., Chicago. A particularly bad practice, in his opinion, is the sale of some grades at a price above the market, for use in adulterating other grades. Mr. Parker, Briggs & Turivas, called attention to the initiative exercised by the scrap dealers in developing new outlets for scrap and thereby creating the need for new classifications.

In another session, the value of scrap specifications was given exhaustive consideration in a paper by C. H. Lipsett, publisher of the *Waste Trade Journal*, New York. The annual turnover of iron and steel scrap is approximately 20,000,000 tons with an estimated value of several hundred million dollars, he said. Scrap is only one of a half dozen commodities constituting the waste material industry, which furnishes raw materials to brass works, paper mills, woolen mills, rubber manufacturers, etc. There were no standardized specifications in any of these commodities fifteen years ago. Today every one of them, with the exception of scrap iron, has standardized specifications approved by buyer and seller. In spite of the magnitude and importance of iron and steel scrap there has been nothing resembling uniform specifications until recently.

The absence of standard scrap specifications has been a source of prolific waste. On an advancing market mill specifications become flexible, whereas,

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when a decline sets in, they become unnecessarily rigid, resulting in wholesale rejections which result in losses running into millions of dollars annually. While this condition appears to affect the dealer principally, it is an expense item which is eventually borne by the mill. The average scrap dealer is anxious to have a uniform set of specifications. It would mean a saving of labor, time and energy. At the present time the yard foreman, and even the common laborer employed in loading cars, must be highly trained to be able to distinguish the various niceties in the specifications of different steel mills. Mr. Lipsett recommended that any standards that are adopted and finally command general acceptance should be rigidly adhered to, regardless of market conditions.

Proposed Classification of Scrap Specification for the Iron Rolling Mills

1. *Iron Axles*
   Iron railroad car axles; M. C. B. sizes, free from locomotive axles and defective or imperfect forgings.
2. *Steel Axles*
   Steel railroad car axles; M. C. B. sizes, free from locomotive axles and defective or imperfect forgings.
3. *Iron Rails*
   Standard section T rails, original weight 50 lb. per yard or heavier, minimum length 4 ft.; free from frog, guard, switch, curved and turntable rails.
4. *Steel Rails*
   Standard section T rails, suitable for rerolling, original weight 50 lb. per yard or heavier, minimum length 5 ft.; free from split heads, frogs, guards, switches, curved and turntable rails.
5. *Shafting*
   Iron and soft steel, 1½ in. to 8 in. round and square; 4 ft. and longer in straight bars.
6. *Arch Bars*
   Iron railroad arch bars and transom bars.
7. *Iron Angle or Splice Bars*
   Wrought iron—50 per cent to be whole bars.
8. *No. 1 Railroad Wrought*
   Heavy wrought iron from railroad shops and cars, 6 in. and longer, including links and pins.
9. *No. 2 Railroad Wrought and Track Scrap*
   Heavy wrought iron and soft steel scrap from railroad shops and cars, 2 in. and longer, including track bolts, spikes and nuts, free of steel shapes and plates.
10. *Cut Forge*
    Iron and soft steel scrap suitable for piling purposes without further preparation. Material to be ⅜ in. or heavier, 4 in. or narrower and not over 26 in. in length or shorter than 2 in. May include wagon tire if cut into 6-in. lengths or shorter; also horseshoes if cut into three pieces. Must be straight and flat; also free from plate, sheet, hoop and washer scrap, punchings and similar material.
11. *Shop Scrap*
    Wrought and soft steel bar, shape and plate ends, punchings and shearings, free from curly clippings and hard steel, all suitable for fagoting.
12. *No. 1 Busheling*
    Iron and soft steel pipes and flues (clean); tank and bands No. 12 and heavier boiler plate punchings and clippings, and soft steel and iron drop forgings and trimmings; nothing to be over 8 in. long or wide, free from galvanized or tinned stock. All steel must be under 0.12 per cent carbon.
13. *No. 2 Busheling*
    Cut hoops, sheet, cotton ties and similar light material; nothing to be over 8 in. long or wide; free from dirt, galvanized or tinned material or other similar inferior scrap.
14. *Pipes and Flues*
    Wrought and soft steel. Must be free from dirt or lime and from riveted seams; nothing over 6 in. in diameter.
15. *No. 1 Mill*
    Iron and soft steel bars not less than ⅝ in. round or square and flats no thinner than No. 12 wire gage, including heavy railroad sheet; tank in separate sheets and rings; boiler sheet and rings, clean pipes and flues, heavy punchings and clippings and strictly soft steel agricultural implement shapes. All steel must be under 0.12 carbon.
16. *No. 2 Mill*
    Iron and soft steel hoops and sheets, railroad sheet, cotton tie clippings and ties, skeleton sheet scrap and iron too light for No. 1 mill; scrap shall be free from galvanized, tinned or badly rusted material.
17. *No. 1 Railroad Sheet*
    To be under ¼ in. thick, consisting of cut smoke stacks, hoops, band iron and steel, pressed steel hand car wheels, scoops and shovels, free of wood, wire rope, cushions and other similar springs and lime encrusted pipe and flues from boilers. Must be free from galvanized iron or tin.
18. *Axle Turnings*
    Wrought iron and soft steel railroad car axles, turnings and chips. Free from tire turnings.
19. *Turnings*
    Machine wrought and soft steel, clean and free from borings and drillings, other metals, dirt, lumps and badly tangled material.
20. *Drillings*
    Wrought or soft steel, clean and free from other metals, dirt and lumps.
21. *Mixed Borings and Turnings, and Cast Borings*
    Clean and free from other metals, dirt and lumps.
22. *No. 1 Cast Iron*
    To be all clean cast iron scrap, nothing under 10 lb. in weight, nor over 48 in. long or 18 in. wide. To contain no brake shoes, cast iron soil or water pipe, cast iron columns, stove scrap or burned iron of any description, and be free from steel parts.
23. *No. 1 Boiler Cut*
    Boiler sheets and rings and riveted flues not under 16 in. in diameter, all rivets cut, no single piece to weigh over 500 lb.
24. *Bundled Sheet*
    Bundled skeleton, bundled cotton ties or wool ties in bundles not over 18 in. in diameter and 30 in. long, tied so they will not come apart, but not tightly compressed, free of metals.

Note: Material on all of above grades, unless otherwise specified, must be free from high carbon or alloy steel.

Soft steel herein mentioned is considered to mean 0.12 per cent carbon and under.

Uniform Scrap Contract Proposed

A DRAFT of a uniform purchase contract for iron and steel scrap was submitted to the iron and steel conference by W. W. MacMillan, National Malleable & Steel Castings Co., Cleveland. The iron and steel committee will consider the contract on the basis of suggestions and criticisms received from the association and will also take it up in conference with the National Association of Waste Material Dealers. The important provisions of the contract are as follows:

Material must be loaded in gondola cars.

Cars arriving without notice showing weights will be held and car service charged to the shipper.

Material is purchased subject to buyer's weight, grading and approval.

This order is given and accepted with the understanding that it is subject to strikes, accidents and causes beyond the buyer's control. If any of the material is not delivered as herein provided, the buyer may, on written notice to the seller, either decline to receive such undelivered tonnage or to buy an equal tonnage in the open market and charge the seller with the excess cost, if any.

Until such notice is given, time of delivery will be considered as extended at pleasure of buyer.

Cars arriving on which there is a question about material will be held pending adjustment and all car service charged to the shipper.

Contract number must be shown on each invoice.

Render separate invoice and bill of lading for each car shipped.

In the discussion of the contract, reference was made to the experience of one company which eliminated the bunching of shipments by dealers through the enforcement of a clause that shipments must be distributed in approximately even parts over the period of the contract. Mr. MacMillan called attention to the fact that while the contract submitted was tentative, no contract could cover all of the individual requirements of purchasers. Fair dealing, he emphasized, cannot be insured through stipulations in a contract.

The suggestion was made that to protect the buyer from the expense of sorting scrap and throwing out

objectionable material, the words "and all other charges" be added to the reference to cars being held concerning which there is a question about the material contained.

In discussing the work of the iron and steel committee during the past year, L. W. Brice, Continental Motors Corporation, Detroit, emphasized the need for popularizing the standard scrap specifications and the idea of a uniform purchase contract. He felt confident that the scrap dealer would fall in line with the purchasing agent and forget all his past objections if a real demand for scrap graded according to the standard specifications can be created.

In referring to the universal scrap purchase contract in his address, Mr. Lipsett thought it might be advisable to insert a clause dealing with the settlement of disputes between dealers and mills. He suggested the formation of a trade tribunal for the settlement of such differences in order to keep them out of the courts and aid in amicable adjustments.

Standards for Tool Steel

THAT the time may be opportune for undertaking the setting up of standards for tool steel was also suggested by Mr. Brice in dealing with the work of the iron and steel committee. Producers of tool steel, however, seemed to be opposed to the move. He quoted from a letter by L. Gerald Firth, Firth-Sterling Steel Co., McKeesport, Pa., as follows:

> Standardization of tool steel is usually suggested for various reasons, chiefly (1) as a means of classifying different types of tool steel, (2) as a means of insuring uniformity by limiting the composition within a more or less narrow range, and (3) as a means of encouraging price competition.
>
> It is now fully recognized that analysis is only a very small factor in quality and that what the purchasing agent desires is to insure a reasonable uniformity, so that steels of different brands will respond as nearly as possible to the same treatment.
>
> This at first sight appears reasonable but they will still be face to face with a far more difficult problem, the standardization of heat treatment. Consider the difficulty of standardizing types of furnaces, time, methods and temperature of heating and drawing, methods and media of quenching, so as to suit the countless types of tools and the opinions of countless expert hardeners.
>
> When you consider in addition that the purchaser has no control whatever over the methods and manufacture of the steel (a far more vital factor than the composition), I think it will be agreed that the benefits of standardization are not so great as first might be thought.
>
> I look upon quality as partly a matter of insurance. To specify a given analysis and then buy purely on a price basis is simply to encourage some manufacturer to quote lower than his competitors because he is willing to take a chance, not so much at his own expense, but at the expense of consumers, for in most cases the purchaser loses more from poor steel than the seller.
>
> By way of constructive thought, we may say that at present there are two main groups of high speed steel, the 18 tungsten type and the 14 tungsten type, and at least one subsidiary group, the cobalt high speed steels. Each of these has somewhat different characteristics and a buyer may have definite reasons for wishing to purchase one or the other. Let the specifications, therefore, in the case of the first two groups be a broad one, with the main intention of differentiating between the two different types. Do not attempt to limit the carbon, tungsten, chrome and vanadium (the key element) within narrow limits, for different manufacturers often strike quite different balances of analysis with equally satisfactory results. Do not forget that balance is an item that is often overlooked and is exceedingly difficult to cover by specifications. There may be a number of advantages in the standardization of high speed steel, but it is my belief that the disadvantages are far more important.

Another protest against standardization of tool steel was voiced at an evening dinner meeting which, like the day session of the iron and steel conference, was presided over by G. C. McClure, American Rolling Mill Co. "Standardization is epidemic," said Dr. John A. Mathews, vice-president Crucible Steel Co. of America, New York, who spoke on the subject, What a buyer should know in purchasing tool steel. "Carbon tool steels among the old companies have been standardized for a century or so. This was spontaneous, and resulted from time and experience and the knowledge gained by the makers through generations in the practice of the fine art of crucible steel making. The present tendency leads to the destruction of established standards and degrades the industry to the basing of quality upon mere analysis—a frail reed to lean upon.

"Tool steel manufacture is a handicraft industry and never will be a strictly mechanical or automatic process. Its products embody the personality and integrity of the firm and the skill, care and patience of workmen, foremen and inspectors in a degree wanting in most industries. It is the things that cannot be written into a specification that are the essence of quality.

"The basing of judgment of quality upon a chemical report as compared with a judgment based on a steel sense, born of experience in handling steel, is like trying to imagine what a stranger on the other end of a telephone is like as compared with a conversation in person with an old friend."

Malleable Castings Standards Have Risen

WHAT standard specifications have meant to the malleable castings industry was touched upon at the same dinner meeting by H. A. Schwartz, metallurgist, National Malleable & Steel Castings Co., Cleveland, who spoke on the properties of malleable castings. He said in part:

"Those of you who have had occasion to follow the matter of specifications for the physical properties of malleable castings as laid down by the American Society for Testing Materials are aware that the standard has constantly arisen. Contrary to the common belief, this improvement has not cost the consumer anything whatever in the form of increased labor or material cost to the producer. You do, however, pay something for this improvement in the form of increased overhead for equipment and supervision, and possibly something for increased foundry difficulties, although the existence of this differential is doubtful."

Simplification and Standardization Eliminate Waste

"FULLY ten billion dollars a year could be saved through simplification and standardization," said H. R. Coleman, division of simplified practice, Department of Commerce, Washington, in addressing a general convention session. "Ten billion dollars is nearly double the amount that was spent for buildings erected in 1924. It is nearly half the total amount of savings bank deposits in 1923, and nearly half the capital invested in manufacturing in this country in 1921.

"The efforts of the division of simplified practice are centered in helping business do away with waste caused by too many varieties of everything. Such varieties exist in everyday commodities to an amazing degree. In many cases the industry does not have an adequate picture of the true conditions until it undertakes a survey of the variety and to measure the need for such variety by the yardstick of demand."

National Directory of Specifications

ATTENTION was called to the compilation of a national directory of commodity specifications, by Dr. A. S. McAllister, engineer physicist, Department of Commerce, Washington, in an address entitled, Standard Specifications—The Goal, and Progress Toward It.

The Federal Specifications Board has been engaged in the work of compiling material for a directory of specifications for commodities purchased by the Federal, State and municipal governments and public institutions. The directory thoroughly classifies the list of specifications for these commodities, including not only specifications formulated by public purchasing agencies, but also by recognized trade and technical societies and associations. Upward of twenty-seven thousand specifications are listed. The directory consists of 600 pages, and will be ready for distribution

about July 1. The advantage of the directory, the first book of its kind ever to be published, is that it will bring to the attention of all persons interested, information concerning all specifications now in existence for all types of commodities as a basis for a general cooperative movement having for its initial object the elimination of many unnecessary specifications, and for its later object the selection from existing specifications of those found to be most nearly universally satisfactory.

Following the publication of the directory there will be issued as rapidly as conditions will permit an encyclopedia of specifications in loose leaf or loose pamphlet form. In preparing material for the encyclopedia, efforts are being concentrated initially on the reproduction of such worthwhile specifications as are difficult to secure. In the directory the specifications will be listed by title and in the encyclopedia they will be published in part or in full. This same subject was also discussed in the convention by Joseph M. Coyle, assistant state purchasing agent, Trenton, N. J.

Standard Conveyor Contract

A STANDARD contract for the purchase of conveying equipment was favorably acted upon and will stand for one year as a tentative association standard. The committee in charge of the preparation of this standard contract, of which T. W. Harris, Jr., DuPont corporation, Wilmington, Del., is chairman, met at Chicago May 22, with representatives of manufacturers, where it was approved after minor changes had been embodied in it. The contract, which covers the purchase of elevating and conveying machinery, is in two forms to apply on purchases both on an f.o.b. and on a delivered basis.

Need for Centralized Purchasing

"Centralized purchasing is an economic necessity," said L. F. Boffey, president and editor, *Purchasing Agent*, New York, in discussing economies of purchasing.

"The products of industry are a combination of two essentials: labor and material. In the workshops of a generation ago labor was the big item in production costs. So industry applied itself to reducing labor costs. This was an economic need. It brought about the invention of specialized machinery to replace expensive manual operations. The story of our industrial evolution from the time of the Civil War to the present is essentially the story of inventive genius and automatic machinery.

"For all practical purposes that story is finished. . . . But progressive industry had anticipated this fact. As the proportionate cost of labor in a finished commodity went down the proportionate cost of material entering into that product inevitably went up. The possibilities of economies in the purchase and use of material became apparent. They led to the establishment of centralized purchasing."

Proposes Change in Coal Buying

Radical changes in methods of buying coal were recommended by Mark Kuehn, National Malleable & Steel Castings Co., Cleveland, at a fuel conference. His recommendations, by resolution, were referred to the fuel committee for study and consideration. Mr. Kuehn called attention to the present demoralization of the coal industry and the great need for stabilization. Sharp fluctuations in coal prices he attributed to the practice of shipping coal on consignment. The sale of this "distress" coal breaks the market and forces every coal operator to meet the low prices, or to stay out of the market until it is again stabilized.

"We must have coal, and the operator in order to live and serve must have a fair profit, and in the end the consumer pays that profit, although he occasionally has opportunity to pick up a few cars of 'distress' coal at prices below the market."

Mr. Kuehn recommended that buyers refuse to purchase consignment coal. "Thus," he said, "the consumer in helping the producer of bituminous coal will serve his own interests." He also suggested that buyers contract for one-half of their yearly requirements to further assist in the stabilization of the coal industry. This practice would bring down the cost of producing coal to lower levels, resulting in lower prices to the consumer. It would mean that the operator would have on his books a certain tonnage that he could depend upon and he could arrange his operations accordingly.

In discussing fuel oil, K. H. Taylor, Illinois Glass Co., Alton, Ill., emphasized the uncertainty of prices. The available resources in oil, of course, are an unknown quantity and from time to time we are warned that supplies will soon be exhausted. There is no fixed relationship between prices of crude oil and fuel oil. Indications call for a continued low market in fuel oil until fall, owing to the heavy seasonal demand for gasoline, leaving a large residium in fuel oil which must be marketed.

Dr. A. P. Bjerregaard, Empire Refining Co., Tulsa, Okla., said that seven different kinds of oil are sold as fuel oil, in an address entitled, "What Is Fuel Oil?" He classified these oils as follows: (1) the residue from crude oil after distillation; (2) gas oil, one of the products of initial distillation; (3) a combination of 1 and 2; (4) the residue from cracking the first distillation; (5) a combination of 1 and 4; (6) natural crude oil; (7) special oils.

A standard fuel oil contract was submitted for the consideration of the conference and for further disposition by the fuel committee.

Business Conditions

"THE present level of wage rates per hour for organized labor is 128 per cent over the pre-war level. The cost of living is 72 per cent, and commodity prices 58 per cent over the same base. This is an unhealthy situation," said H. M. McGill, director commodity department, Babson's Statistical Organization, in discussing business conditions and outlook. "Economic forces are now at work which are bound to correct this radical discrepancy, but here again it will take time and meanwhile high labor costs are preventing the readjustment in certain phases of industry which is essential.

"There are certain industries that are facing a readjustment. There are many that could be mentioned, but the outstanding example is building. There is now no housing shortage, office and apartment building has been overdone, there is no need of industrial expansion. The underlying trend of building in the United States is downward, and as the decline progresses there should be a shake-down in building material prices and labor. The automobile industry should be watched carefully for any signs of a shake-down.

"There are definite signs that the United States trade is suffering from the influx of foreign goods. Europe owes our merchants and investors nearly four billion dollars. This country owns 60 per cent of the total gold supply of the world. Foreign debts cannot be paid with the metal. Europe's salvation is in buying raw materials and sending finished goods here. Europe will endeavor to regain her pre-war status in international trade, and the United States, despite the tariff, will be forced to meet European competition."

The selling of merchandise on the installment plan is being overdone, according to Mr. McGill, and unless the practice is checked it may result disastrously.

In Mr. McGill's opinion the general price trend during the next ten or fifteen years will be downward and hand-to-mouth buying will be the rule. The last ten years has been a period of efficiency in production. Now attention will have to be directed to efficiency in management, efficiency in buying, efficiency in selling.

In discussing Mr. McGill's address, Frank Habicht, Clark Equipment Co., Buchanan, Mich., expressed the opinion that wages will stay on a higher plane than the cost of living. Years ago such items as the automobile and the radio were not included in the cost of living. The necessity for relatively higher wages today lies in luxuries. It is questionable whether it would be in the interests of good business to eliminate these luxuries.

In referring to the speaker's recommendation that

industries keep production down to the level of demand, George C. Pohler, Cosden & Co., Tulsa, Okla., stated that it was practically impossible for the oil industry to regulate supply to conform with consumption. If the man who has a lease knows that there is oil he is bound to drill, he said.

Roy J. Taylor, Hupp Motor Car Corporation, Detroit, spoke in defense of the automobile industry. He stated that an automobile which sold at $2,500 before the war is now selling at $1,500 and is an infinitely better machine. Other commodities, on the other hand, are 40 to 100 per cent higher in price than in pre-war days.

At the iron and steel conference dinner the steel situation was discussed by G. L. Lacher, western editor, THE IRON AGE. He called attention to the fact that steel production is rapidly being adjusted to conform with demand. Prices likewise have subsided, THE IRON AGE composite price of finished steel now being on a parity with the low point of last October. The composite, likewise, is lower than the average for any complete year since 1915, save one, 1922, which was a year of recovery following the severe depression of 1921. The fact that the composite price has remained unchanged since the first week in May suggests that if the trend of prices is still downward, it has slowed up materially. An increasing number of small orders placed with the mills calling for quick shipment supports the view that consumers' stocks are fast approaching the point of liquidation. The fact that some of the larger buyers of pig iron have placed heavy tonnages for the first time since last winter may also point the way to what may be expected in steel. Significance may also be attached to recent advances in scrap. The scrap market frequently portends expansion and contraction in the steel business and in this instance may be running true to form.

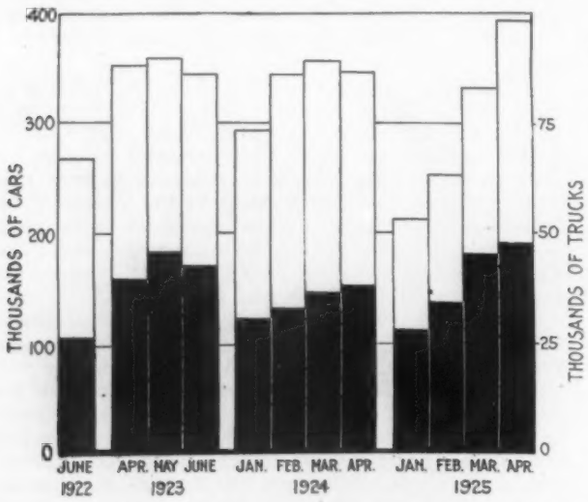
Other features of the convention program included an illustrated address by Frank Grossmann, United States Cast Iron Pipe & Foundry Co., on the making of cast iron pipe, including the manufacture of centrifugally cast pipe; a paper on the general uses and manufacture of copper and brass products, by George A. Sloan, secretary Copper & Brass Research Association, New York, and one on secondary metals by E. G. Rapael, sales manager, Federated Metals Corporation, Chicago. George H. Ashley, State geologist of Pennsylvania, Harrisburg, presented a practical classification of coal.

Wide Reading of Trade Papers Indicated

That trade papers are very widely read was clearly demonstrated at a general convention session in which the discussion was led by P. F. Jerome, International Y. M. C. A., New York. About 300 were present and a showing of hands indicated that practically all regularly read trade papers. In a similar manner it was shown that two-thirds of those present read trade papers in office hours and the remainder do so at home because of lack of time at the office.

New High Record in Automobile Production

Production of passenger cars and trucks in April was the highest for any month in the history of the industry, according to figures issued by the Department of Commerce. The total of passenger cars was 391,301, displacing the previous record of 358,685 made in May, 1923, while the figure for trucks was 47,664, displacing



Automobiles Made in the First Four Months of 1925, with Comparison for 1924 and for the Highest Months of 1923 and of 1922. The columns show, by total height, the number of passenger cars. The black areas, on a different scale, represent trucks

the previous high record of 45,804, which was made also in May, 1923. The combined total was 438,965 vehicles, of which 421,878 were made in the United States and 17,087 in Canada.

Total production for the first four months consisted of 1,189,175 passenger cars and 155,268 trucks. This compares with 1,340,734 passenger cars and 137,984 trucks in the first four months of 1924 and with 1,167,916 passenger cars and 120,382 trucks in the first four months of 1923. The truck production makes a new record for the first four months of the year, while the passenger car production is second only to that of last year.

Improving Jones & Laughlin Chicago District Property

The Jones & Laughlin Steel Corporation, Pittsburgh, is gradually taking steps toward the improvement of its property at Hammond, Ind., according to reports from the Calumet district. Two of the largest type of steam excavators have been assembled at 130th Street and Calumet Avenue, Hammond, to handle filling material which will be delivered to the company's site over a new spur track of the Indiana Harbor Belt Railroad.

The Jones & Laughlin Co. recently contracted with the Inland Steel Co., Indiana Harbor, for its entire output of slag and cinders for use in filling in for the first unit of the proposed plant. The East Chicago ship canal has been deepened to 21 ft. as far as the Jones & Laughlin site and it is reported that the dredging of a new channel through the property will be undertaken this summer. Plans and permits for a new private water intake from Lake Michigan and a private sewer to discharge into the Grand Calumet River have been tentatively approved by the city of Hammond.

British Empire Steel Works Records

Since starting operations on March 1, the British Empire Steel Corporation has made a number of new production records at its Sydney, N. S., works. No. 1 blast furnace broke all previous daily, weekly and monthly records in April, the best previous record having been made during March, 1924. The following table gives a comparison for the month of March, 1924, and April, 1925:

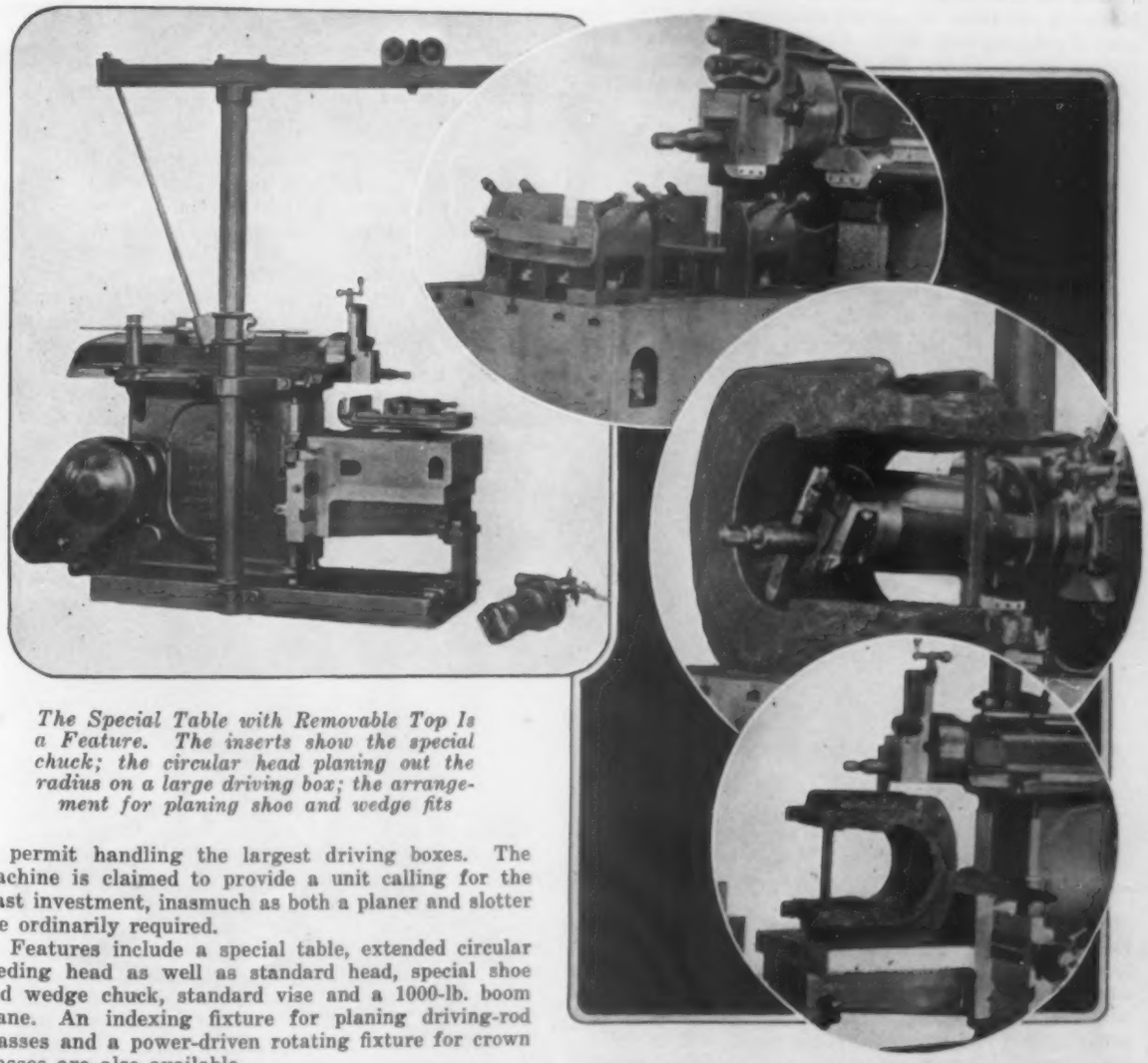
	March, 1924 31 Days	April, 1925 30 Days
Daily average	425 tons	450 tons
Best day	514 tons	522 tons
Best week	3,106 tons	3,233 tons
Month	13,192 tons	13,496 tons

The average hourly production in the rail mill was 34.5 per cent better than any previous month since the mill has been in operation, while the total salable rails rolled was 99.3 per cent; 95.4 per cent were firsts, 3.9 per cent showing mechanical and physical defects, with the non-salable rails being 0.7 per cent.

NEW RAILROAD SHAPER

Special Features Permit of Machining Largest Locomotive Driving Boxes

The shaper here illustrated is of recent design and is intended for railroad work, being arranged particularly for the complete machining of locomotive driving boxes and their accompanying shoes and wedges, driving box brasses and rod brasses. The machine is built by the Cincinnati Shaper Co., Cincinnati, and in addition to the features of that company's 32-in. heavy-duty Climax shaper, special features have been added to permit handling the largest driving boxes. The machine is claimed to provide a unit calling for the least investment, inasmuch as both a planer and slotter are ordinarily required.



The Special Table with Removable Top Is a Feature. The inserts show the special chuck; the circular head planing out the radius on a large driving box; the arrangement for planing shoe and wedge fits

Features include a special table, extended circular feeding head as well as standard head, special shoe and wedge chuck, standard vise and a 1000-lb. boom crane. An indexing fixture for planing driving-rod brasses and a power-driven rotating fixture for crown brasses are also available.

The special table is arranged with a removable top, 9½ in. deep, which provides a range of distances between the ram and the working surface of the table. This removable top is left in place when planing the crown brass fit in the driving box, as shown in the illustration, planing shoes and wedges, or when doing the usual run of shaper work, either with or without the standard vise. It is removed when planing the shoe and wedge fits in the driving boxes, and, when used in this way, provides sufficient height between the table and the ram to permit the largest driving boxes to be placed directly on the table. Mounting the work in this way is emphasized as keeping it directly in line with the outer table support, insuring maximum stability for the cut. The working surface of the upper table measures 32 in. long and 24 in. wide, and of the lower table, 24¾ in. long and 24 in. wide.

The circular feeding head is used in planing out the brass fit in driving boxes, being used for fits ranging from a minimum of 8 in. in diameter to a possible maximum of 18 in. in diameter. This head is rigid, the extended body being bolted directly onto the end of the ram with four heavy bolts. It may be rotated either by hand or automatically in the same manner as the down feed on the standard shaper. This circular feeding head is furnished in addition to the standard head, and interchanges with it on the circular T-slotted end of the ram.

The special shoe and wedge chuck, illustrated herewith, is arranged to handle both small and large shoes and wedges, and is made in two parts which can be adjusted on the table to suit short or long work. Making the chuck in this way permits the operator to set his surface gage directly on the shaper table when lining up his layout marks or punches. The work rests on four convenient adjusting screws which can be easily adjusted to line up the layouts. The work is held down by eight screws coming in at an angle from the sides as shown. The front half of the chuck is provided with an end stop bar.

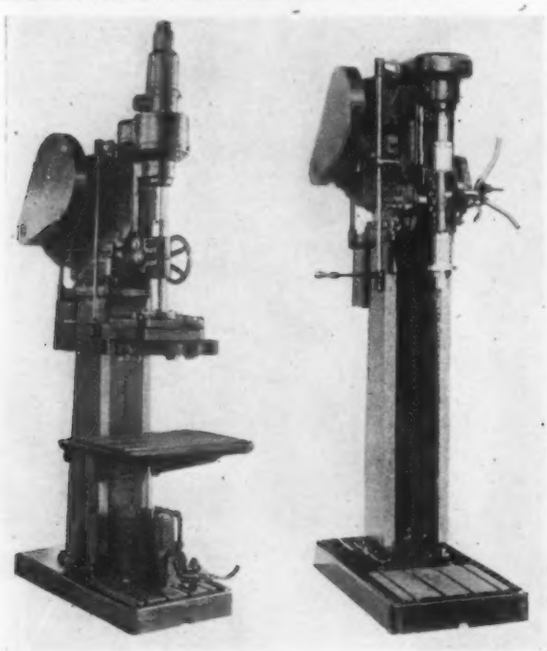
The vise is unusually heavy and is of the double-screw type. It is of compact design, having its working surface but 5 in. above the working surface of the shaper table. The jaws are 3 in. high by 15 in. long, and the maximum vise opening is 15 in. An unusual feature of the vise is that but four bolts are used, the same bolts being used for swiveling and securing the vise to the table.

In addition to the special features as outlined, the new shaper provides all the advantages of the standard machines, including full automatic oiling. Eight speeds are obtained through the internal transmission, which is entirely within the column and runs at all times in a bath of oil. The various feeds are operated by cams, the feeding mechanism being fully inclosed and operating in oil. Stroke lengths may be set rapidly without the necessity of starting the machine to determine the length.

Machine for Honing Engine Cylinders

The removal of high spots in automobile cylinder blocks in approximately 1½ min., leaving a smooth bearing, is claimed for the honing machine illustrated, which has been placed on the market by the Barnes Drill Co., Rockford, Ill. The finish is said to be of such quality that the lines left by the honing abrasive stones are entirely removed in 6 hr. of dynamometer test. The machine, which is designated as the No. 211, is an adaptation of the company's No. 210 ball-bearing, self-oiling, all-geared drilling and tapping machine, which was described at length in THE IRON AGE of Nov. 6, 1924.

Before honing and after setting the studs in the block all cylinders are simultaneously reamed in the special reaming machine shown in the right-hand illustration, which pictures the machine without the jig and head. This machine is also an adaptation of the No. 210 drilling and tapping machine referred to above. Features of this machine include the 5-hp. self-contained silent-chain motor drive and a special column, which is sufficiently high to permit of attaching the multiple head, reamer bars and jig equipment. The vertical shaft and lever control the multiple disk clutch. An interlock between the clutch and push-button control is provided. This prevents throwing on the brake for stopping the spindle until the current is shut off. There are stop, coast and start positions.



The Cylinders Are Reamed In the Special Machine at the Right and Then Honed on the Machine at the Left. From 0.001 to 0.0015 in. is removed by the hone in from 1 to 2 min.

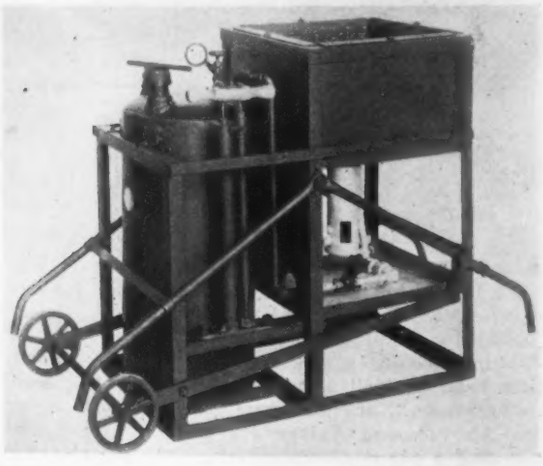
From the reaming machine the blocks are passed to the honing unit, shown at the left, and all cylinders are honed simultaneously. Usually from 0.001 to 0.0015 in. is removed by the hone in from 1 to 2 min., but if at the end of that period one cylinder should still be under size, the block is passed to a single spindle machine of the same type for further honing. The honing machine is equipped with an air operated table having a piston travel of 10 in., which is a convenience for dropping the table to its lowest position, free from the hones during the reloading of the cylinder blocks. The clutch lever permits of stopping the spindle in the uppermost position. The spindle carries a cylindrical cam mounted for convenient removal or change of position, just above the crown gear. The cam roller is mounted in a ball-bearing and operates in the cam track, and is geared to rotate counter-clockwise, while the six-splined spindle rotates clockwise. The ratio of one to the other may be arranged to suit requirements. Assuming that the cam roller runs backward 50 revolutions and the spindle rotates forward 100 revolutions, there would result 150 reciprocations of the spindle per minute. The cam regularly provided gives a 5-in. stroke, although the cam can be cut for greater or less strokes as may be desired. The speed may be also geared to suit particular requirements. Where the multiple head is used, slower reciprocations are recommended.

The bonnet shown serves as a dash pot for the upward stroke of the spindle, a coil spring on the spindle, between the crown gear and the cam cylinder, taking the downward thrust. As regularly supplied the cam track has no dwell at the bottom or top of the stroke, but the cam track may be cut to suit special requirements. The six-splined spindle operating in a broached cast iron hub for the steel crown gear, and self oiled, is stressed as best adapted to rapid reciprocation.

Portable Babbitt or Lead Melting Furnace

The Chausse Oil Burner Co., Elkhart, Ind., has placed on the market a portable furnace for use in melting lead, babbitt and cyanide, this equipment being made up of a combination of the company's oil-burning torch with a retort, mounted on a framework with wheels, as shown in the illustration.

The forge, which weighs about 160 lb. empty, is 20 in. wide, 36 in. long and 33 in. high. The heating chamber is 14 by 14 by 16 in. high and is lined with fire brick, with the flame entrance from the bottom. The kerosene tank holds 12 gal., which is said to be sufficient for 12 hours operation at maximum temperature, and it is claimed that the burners, consuming 1 gal. per hour, will deliver sufficient heat to melt 200 lb. of lead in from 20 to 30 min. from a cold start. The maximum temperature generated by the burners is 1800 deg. Fahr. Pressure on the tank is maintained between 10 and 20 lb. by means of a hand pump. A feature stressed is the movement of the wheels which are arranged so that when stationary the forge sets horizontally on its base. By lifting the handles at the rear the wheels are lowered, and the furnace can be moved from place to place without tilting; when it is set down the wheels rise off the floor.



Portable Furnace for Wide Variety of Uses

This equipment, designed originally as a lead and babbitt melter for municipal water works and for babbitting engine bearings, is said to have been found satisfactory for melting cyanide for case hardening, for boiling water, for heating pipe to be bent, for expanding gears or collars and in various other uses.

A small bulletin, new series, Vol. XXVI, No. 32, descriptive of the course in chemical engineering at the University of Michigan, Ann Arbor, Mich., has recently been issued. It describes the graduate courses in general chemical engineering, metallurgical engineering and gas engineering. It is obtainable on request.

Develops Portable Sanding Machine for Metal Products

Savings as high as 30 per cent over the hand-filing method are claimed for the portable sanding machine here illustrated, which is intended for use in the finishing of metal products.

The machine consists of a special abrasive disk driven by an electric motor through a flexible shaft. The disk is coated with Aloxite grains and is claimed to remove stock rapidly, leaving a uniform finish, the cutting action of the disk being described as leaving a very fine scroll without deep scratches. It is said to produce a surface that fills evenly with paint, where paint is to be applied, eliminating much of the glazing necessary where file marks are present. The uses of the machine, which was developed by the Carborundum Co., Niagara Falls, N. Y., include the finishing of automobile bodies, metal furniture, railroad car metal work, finishing of safes, die blocks and similar material. The machine may be used in salvaging flat metal panels which, because of the presence of stretcher strains and seams, are generally discarded.

The Motor Is Carried on a Pedestal Which Is Supported by Four Double Casters. The abrasive disk is made up of Aloxite grains. Flexibility is a feature of the machine

The arrangement of the machine permits of reaching the work from almost any angle, and the disk is adapted for finishing concave, convex or flat surfaces, grinding also both wide and narrow surfaces, sharp curves and contours.

The motor is mounted on a cast iron pedestal 24 in. high, supporting a swivel table which provides for swinging the motor through an arc of 180 deg. The pedestal is supported by four double casters. When the machine is not in use the head is placed in a holder provided on the table. The main castings of the grinding head are of aluminum, and the assembly shafts and spindles are of steel, and are supporting in ball bearings. Heat-treated steel miter gears running in a grease-packed chamber provide angular drive from the flexible shaft.

The disks are made up of Aloxite grains, an aluminous abrasive manufactured by the Carborundum company, coated on a backing of cloth drills. The cloth-backed disk is then fixed to a special fiber board disk with a molded countersunk center, punched with six pin holes which locate over the pins in a special lock nut, holding the disk securely to the sanding machine head. The disks are 9¼ in. in diameter. Supporting the disk is a flexible and compressible pad which yields under slight pressure, and thus conforms to the work projections. This patented feature, together with the flexibility of the Aloxite disk itself, is stressed as permitting the disk to conform readily to moldings, beadings, sharp curves and contours. It is claimed that the disks will not crack or split or shed their grain. They are furnished in nine grit numbers, from 16 to 150, depending on the finish desired and the nature and condition of the metal to be finished.

Cuts Bevel Shear Scrap Without Rehandling

The Flowers rotary scrap shear, illustration of which is shown, is designed to be attached to bevel shears for automatically cutting the scrap into short lengths without rehandling. The scrap, as it is sheared in short lengths ready for the mill, drops into a receptacle which may be placed under the floor. The scrap shear is geared direct to the bevel shear and becomes a complement to the machine; consequently, the two operations of beveling and cutting the scrap into short lengths becomes one operation. The operation is said not to complicate nor retard the operation of the bevel shear.

Scrap from bevel shears is usually accumulated at or near the machine and must be rehandled and sheared into short lengths. Coming from the bevel shear in long, slender spirals, this class of scrap is expensive and dangerous to handle, the cost of rehandling being estimated as averaging from $5 to $8 per ton, according to conditions. The Flowers machine is intended to eliminate this expense.

The scrap shear can be applied to any make of rotary shear already installed and can be made an integral part of a new machine as well as to certain conditions existing in connection with squaring, slitting and Quick-work rotary shear installations. The first machine is about three years old and many have been installed recently in plate shops. The machine is the invention of J. C. Flowers, formerly with one of the large tank manufacturers, but now associated with the Thomas Spacing Machine Co., Fulton Building, Pittsburgh, with plant at Glenshaw, Pa.

The Scrap Shear, Attached to the Bevel Shear, Cuts the Scrap into Short Lengths for the Mill

Port facilities of Los Angeles, Long Beach, San Diego and San Luis Obispo, Cal., are covered in Port Series No. 13, prepared by the War Department Board of Engineers for Rivers and Harbors in cooperation with the United States Shipping Board Bureau of Research. The book covers 249 pages, with a profusion of maps, diagrams and photographs dealing with the trade of the Southern California ports and their facilities for handling it. Numerous tables of statistics set forth the important points discussed.

Problems in Heat Treating Steel

Steel Treaters at Sectional Meeting Discuss Forgings, Magnetic and Rustless Steel, and Furnace Costs and Efficiencies

THE periodical sectional meetings of the American Society for Steel Treating have become events of influence and importance, not only to the society itself but to the individual members. The board of directors, which inaugurated such meetings about four years ago, have been rewarded beyond their expectations. These gatherings are held in various districts in the winter and spring of each year. Plant visitations and a banquet are regular features.

The spring meeting this year was held at Schenectady, N. Y., last week, May 28 and 29, and established a record in attendance, in enthusiasm and in general merit. Over 100 members from Cleveland, Pittsburgh, Boston, New York and other chapters were registered. It was the eighth meeting of this type. The first was held in New York in the spring of 1922. The Schenectady chapter was praised for the success of the meeting. Signal cooperation of the General Electric Co. and the American Locomotive Co. was a feature. The new hotel, the Van Curler, opened only three weeks previously, was the headquarters where most of the technical sessions were held.

A Variety of Technical Papers

FOUR sessions were devoted to the technical program. Three papers were presented at the Thursday morning session, two were delivered at the close of the banquet, two at a brief session in the research laboratory of the General Electric Co. at the close of an inspection of the plant on Friday afternoon and three at a special session conducted Friday evening at the hotel headquarters. The papers as a whole were varied in the subjects treated and of a generally high quality. None of them was preprinted, but most of them will appear in the *Transactions*.

Stainless Iron and Steel

Stainless steel and iron made up part of the program of the first session on Thursday morning, with V. O. Homerberg, Boston Chapter presiding. P. A. E. Armstrong, formerly vice-president Ludlum Steel Co., Watervliet, N. Y., introduced this subject by the statement that the original announcement of his paper as "Some New Developments in Stainless Steel" was not correctly titled. His object was to review some of the things that have been done and to deal very frankly with the subject. He said in part:

> Rustless and stainless irons and steels are only free from surface corrosions when the conditions under which they operate are good. Of course this does not mean to say that the conditions which would be favorable to maintaining a bright surface with these materials would not corrode in a most tremendous fashion ordinary iron and steel; but general atmospheric corrosion, salt water corrosion and the like will cause all of the stainless steels and irons, whether they be hardened or whether they are annealed, to become surface corroded. They all change color.
>
> The reason why rustless iron and rustless steel do not suffer from any more than surface corrosion is because of the film forming characteristics of these materials. In this they are like copper and bronze. Ordinary iron forms a protective film but it is so porous that it adds to the rusting of the iron; whereas the film that forms upon the surface of rustless iron is so non-porous that it effectively prevents any further corrosion.
>
> He read an extract from a valuable paper prepared by K. K. Jarvinen of the city laboratory for hygienic investigation, at Helsingfors, Finland. In this paper Dr. Jarvinen shows that most of the materials used for cooking utensils are distinctly harmful and that quite large quantities of iron, copper, tin, nickel, aluminum and enamelware pass into solution with the food. Rustless iron was tested by the same methods and shows that there is no metal passing into solution at all. In view of the coming use of rustless iron for cooking utensils this contribution by an outside source is particularly acceptable, said Mr. Armstrong. The author dealt at some length with the advisability of high chromium steels and also with the very low proportional limit or true elastic limit that rustless irons have when in the annealed or softened condition, pointing out that if alloyed with other metals this very low proportional limit can be raised to a minimum of about 40,000 lb. and that the published information concerning high chromium irons in the soft state is incorrect. He drew attention to the paper by Strauss and Talley, delivered last year at the annual meeting of the American Society for Testing Materials at Atlantic City, where they confirm these results and also to the recognition by the Navy Department of the fact that rustless iron and steel corrodes when subjected to atmospheric conditions, and that in their bids, surface corrosion of the very light type is not considered detrimental. "This is the first time that anyone connected with the development of rustless irons and steels has been honest enough to tell the truth about rustless iron."

In the discussion J. M. Lascelles, Westinghouse Electric & Mfg. Co., Pittsburgh, showed by means of slides the results of some experiments which indicate that stainless iron at high temperatures retains its elastic properties.

Ship of Rustless Iron

Mr. Armstrong had stated that a 1000-ton ship was to be built on the Pacific Coast of rustless iron and, in response to a question as to what the advantage might be, he replied that there were two: Dividends for the steel company and non-corrosion as compared with a ship of ordinary steel. He also replied to a query regarding the corrosion properties of cold drawn material by stating that this was no more corrosive than polished annealed rustless material.

Magnetic Properties of Silicon Steel

W. E. Ruder, metallurgist, Research Department, General Electric Co., Schenectady, presented an abstract of his paper, "The Relation of Crystal Orientation to Magnetic Properties of Silicon Steel." He said in part:

> A study of the magnetic properties of single grains of silicon steel (3 per cent Si) disclosed a marked relationship existing between the permeability and magnetization values of the crystals and their orientation with respect to the path of applied flux. It was found that, when the edges of the cube of the crystal lay at right angles and parallel to the direction of flux, the permeability at medium and high densities

was about three times that of the same material in the fine grained state, and from 10 to 20 times that of a single grain in which the cube edges formed an angle of 45 deg. to the direction of applied flux.

The orientation was determined by increasing the angle of reflection of light from the surface of the etched crystal grain. Altogether some one hundred single crystals of varying orientation measuring 10 in. x ½ in. were studied. The way of achieving a considerable increase in the permeability of commercial magnetic steels through the control of grain orientation is pointed out. The principal conclusion of the paper is "that the magnetic permeability at medium and high densities is a function of the angle of orientation of the crystal around the vertical and horizontal axis perpendicular to the direction of the applied flux."

Replying to a few questions Mr. Ruder stated that there did not appear to be any relation between maximum permeability and orientation and that physical properties vary with the orientation of the grain.

Case Hardening

Case carburizing was dealt with in a paper by that title, which was read in abstract by R. T. Bayliss, editor of the society's *Transactions*. The author, B. F. Shepherd, metallurgist, Ingersoll-Rand Co., Easton, Pa., was unable to be present.

In this paper the author offers certain general recommendations for carbonizing and for the heat treatment of carbonized objects. This he considers necessary because of the wide range of application for case-hardened objects and the influence on the process of works practice and operating conditions. Three factors govern the process, says the author:

1. Chemical composition of the metal.
2. The carbonizing operation.
3. The hardening operation.

Carbonizing steels should be selected according to the service requirements of the parts to be made from them. It must be remembered that the carbonizing process cannot remove imperfections, irregularities or faults in the steel. It will magnify them. Several well-known types of steel should be adopted as standard. It is preferable to have these conform to specifications of national engineering societies. For special cases, it may be necessary to have special analyses, but adherence to a few steels will result in better service from the steel maker when business is good and steel difficult to obtain.

The author then takes up carbon and alloy steels which are suitable and follows this with a discussion of the carbonizing process. He treats of the action and the properties of the various compounds and their defects. A considerable portion of this paper is devoted to a discussion of the heat treatment of case-hardened objects, including the regenerative quench, the cooling of pots, depth of case and hardening temperature. Some space is devoted to distortion, tempering, furnace practice for hardening and testing.

Discussion

It was developed in the course of an informal discussion, as well as in replies to certain questions, that the problem of local carbonizing and distortion was solved in one way by using the carbonizer in the form of a paste and packing the object in clean white sand. The Rockwell hardness testing machine was mentioned as the best means of measuring the depth of case-hardened objects. E. E. Thum, Linde Air Products Co., New York, recommended a book by the Italian metallurgist F. Giolietti, as being exhaustive in its treatment of carbonizing and as capable of answering many troublesome questions. S. P. Rockwell stated that there is no carbon heat treatment to fit all cases; that where 1.15 per cent carbon was necessary in many cases, 0.80 to 0.90 per cent was particularly suited to a travelling ring used in the textile industry. Discussing king bolts for automobiles, Mr. Rockwell said that often 3.50 per nickel steel for these often failed due to the harsh treatment of garage men and that it had been found that wrought iron could stand up better because it would bend and not break.

At the last technical session held Friday evening, at the Hotel Van Curler, three papers were presented. This session was presided over by W. E. Ruder, research laboratory, General Electric Co.

The first paper, entitled "On the Nature of Austenite and Martensite," was presented in abstract by E. C. Bain, metallurgist, Union Carbide & Carbon Co.'s Research Laboratories, Long Island City, N. Y. The author stated, before discussing the details of his paper, that the proper title when it appears in the *Transactions* of the society will be "Retention of Austenite after the Quench."

Mr. Bain's paper, which centered around various illustrations thrown on the screen, charts the range of temperature for which the austenite in several steels produced by quenching is decomposed upon reheating. Depending upon the amount of alloy added, this temperature may extend from 300 to 1200 deg. Fahr. He dealt with about 10 different steels. Stronger atomic bonding in the austenite solution is suggested as a cause for the retention of austenite and increased atomic mobility is assumed to effect the destruction of austenite. A parallel is drawn between reheating and cold working. The abnormal working of an austenitic chromium steel by cold work is cited and finally an attempt to explain the phenomenon of the retention of more austenite after an oil quench than after a water quench is made on the basis of the deformation effect upon the specimen by the rapid thermal contraction and expansion.

Dr. S. L. Hoyt, research department General Electric Co., characterized Mr. Bain's discussion as a logical summary of the work in this field in America. Having just returned from a trip to Europe, Mr. Hoyt related briefly some of his experiences, pointing out particularly the work of a prominent German mettalurgist, Dr. Hahnemann, in this field, whose work, in the opinion of Mr. Hoyt, presents a new picture of the nature of the changes discussed by Mr. Bain and tells of a new method of attacking these problems.

Large Forgings

The second paper was presented by A. O. Schaefer, assistant engineer of tests, Midvale Co., Nicetown, Philadelphia, under the title, "Manufacture and Heat Treatment of Large Forgings." This paper gives a résumé of the special precautions necessary in the manufacture of large forgings as distinct from small ones. The forgings dealt with may range from 20,000 to 300,000 lb. The author points out that special open-hearth practice is necessary to produce the large ingot and discusses briefly segregation, pouring temperature and the design of molds. The treatment of the ingot for forging, because of its size and the danger of unbalanced strains must be carefully done. The ingot or billet must never be heated or cooled under non-uniform conditions. Presses, the design of dies, and forging operations are all gone into. The improvement of mechanical properties in the direction of the forging work should be considered in laying out the ingot and forging. The author recommends that pieces, subject to radial and tangential stresses, are best upset.

Following this the manufacture of hollow and other types of forging is explained by Mr. Schaefer. Discussing the heat treatment, he says that in the case of large masses of metal this starts with the disadvantage of its comparatively poor initial condition. The rate of cooling cannot be controlled and, what is termed a "stepped" anneal is best, to bring about grain refinement. Quenching may be resorted to to procure better physical properties, but, before the quenching treatment, the metal should be conditioned by a "stepped" anneal. Other methods of testing are mentioned.

Heat Treating Costs and Efficiency

C. L. Ipsen, industrial heating department, General Electric Co., presented an abstract of his paper "Determination of Heat Treatment Costs and Furnace Efficiencies." He said in part:

Efficiency ratings can readily be applied to power equipment in general where a definite relation exists

between input and output, but the conversion of energy in a furnace and its absorption by the charge differs radically in many essential details from its conversion and use in such power equipment. Therefore, considerable confusion and misunderstanding have attended the efforts to apply similar efficiency ratings to furnaces. To illustrate the various points in question, the author considers as a simple case the pertinent factors in the design and operation of an electric box type furnace for annealing certain forgings at 1650 deg. Fahr. at the rate of 800 lb. per hour. Following this he considers the use of the same furnace for two additional purposes; heating die blocks at 1450 deg. Fahr. and carburizing at 1550 deg. Fahr. Efficiency is usually defined, says the author, as the ratio of output to input and is expressed in per cent. He then considers various efficiency ratings under the following heads:

1. Full load hourly efficiency.
2. All week efficiency when operating 48 hr. or 5½ days per week at full output.
3. All week efficiency when operating three shifts or 128 hr. a week. The use of the same furnace when heating die blocks and when carburizing is then discussed in detail.

Having discussed furnace efficiencies and the cost of heat for carrying on heat treating operations, Mr. Ipsen states that many people who investigate heat treating costs and compare various fuels and furnaces place chief emphasis on this part of the problem without realizing that in many cases there are other factors than the cost of heat. He then discusses these other factors under the following heads:

1. Quality of product, inspection and rejections.
2. Cost of subsequent cleaning operations.
3. Cost of subsequent machining operations.
4. Maintenance of furnace and auxiliary equipment. Interruptions.
5. Capital investment, depreciation, obsolescence.
6. Labor, working conditions.

In conclusion the author in studying heat treating costs says one thing that should always be borne in mind is that any generalizations are to be avoided. Each problem requires individual study. The difficulty of making a cost analysis along the lines suggested in this paper have forced many manufacturers to be content with "half a story" and to base their conclusions on items of cost most readily obtainable; hence, the undue emphasis placed on relative first costs and relative fuel costs. Only in large manufacturing plants where repetition work is being done can such costs be accurately obtained.

There is at present great need for a thorough and unprejudiced investigation which will assist manufacturers in more accurately determining the over-all cost of heat treating. He closes with a suggestion that the society with its desire for usefulness and its interest in the advancement of the science and art of heat treating, might well consider directing a study along these lines.

Permanent Magnet Steels

At the conclusion of the inspection of the General Electric Co.'s plant Friday afternoon, a brief technical session was held in the assembly room of the research laboratory. In the short time available for this session, which was presided over by A. H. D'Arcambal, metallurgist, Pratt & Whitney Co., Hartford, Conn., only two papers were presented.

L. F. Johnson, railroad metallurgist, United Alloy Steel Corporation, Canton, Ohio, discussed "The High Points in the Manufacture and Working of Steel." The author verbally abstracted his paper which dealt with the various practical problems which arise in the manufacture of basic open-hearth steel and in rolling and forging. His treatment covered the chief features in these various operations, closing with a plea for careful regulation of temperature, particularly in rolling and forging. In his opinion, defective material and other troubles are due more to a lack of a thorough understanding of proper temperature and their regulation than to anything else.

"Permanent Magnets With Reference to Certain Radio Requirements" was discussed by R. P. De Vries, metallurgist Ludlum Steel Co., Watervliet, N. Y. The author presented the results of certain experiments which he has conducted on various grades of magnet steels to determine the heat treatment which must be given these steels in order to restore their magnetic properties after they have been manipulated mechanically in order to form them into certain shapes for radio apparatus. The steel, in order to be blanked into the various forms desired, must be in an annealed or soft condition, whereas ordinary magnet steels for ordinary purposes are used in the quenched or hard state. Mr. De Vries took up various chromium, tungsten and other magnet steels and showed how their original magnetic qualities could be restored after the blanking operations by suitable heat treatment.

The Banquet and Visits to Plants

Thursday afternoon, May 28, a large number of members and guests were taken by automobile to Watervliet, N. Y., where the plant of the Ludlum Steel Co. was inspected. Upon arrival there luncheon was served in tents.

Practically all of Friday, May 29, was devoted to visits to the plants of the General Electric Co. and the American Locomotive Co. The latter plant was inspected by a group during the forenoon, which later joined those who had already gone to the plant of the General Electric Co., the assembled members and guests being served a luncheon by the latter company in one of its large cafeteria restaurants. At the close of this luncheon, C. E. Eveleth, general manager, Schenectady plant of the General Electric Co., delivered a brief address of welcome. The remainder of the afternoon, up to the time of the technical session at 4 p. m., was devoted to the inspection of the large research laboratory of the company.

The Banquet

Over 225 members and guests sat down Thursday evening to the largest banquet ever held at a sectional meeting. In an exceptionally facetious and successful manner W. H. Eisenman, secretary of the society, acted as toastmaster.

The address of welcome was delivered by William Dalton, president Schenectady Chamber of Commerce, with the response by W. S. Bidle, president of the national society. Dr. W. R. Whitney, director research laboratory, General Electric Co., spoke in both a light and serious vein of some of the work of his department. He was followed by R. B. McColl, manager Schenectady plant, American Locomotive Co., who emphasized the extent to which his business was dependent on heat treating by stating that his company spends each year about $16,000,000 for steel. At 45,000 lb. of steel per locomotive and with four locomotives turned out each day, approximately 180,000 lb. of steel per day must undergo heat treatment for use in the locomotive business of his plant.

Two papers or addresses wound up the program at the banquet. Both were remarks which centered around illustrations thrown on the screen. Col. T. C. Dickson, commanding officer Watertown Arsenal, Watertown, Mass., discussed some of the work done there on the examination of steel castings by means of the X-ray. Dr. F. C. Langenburg, director of laboratories at the same Government plant, discussed the "Manufacture of Guns by the Cold Working Process." It was a lucid explanation of the method, now under investigation, of making guns of one piece instead of two or of expanding the breech end of the gun from one piece of steel to the proper size, by cold work instead of shrinking on the usual cylinder or cylinders, as in the compound gun. He emphasized the unusual strength and elasticity obtainable from the new method.

The 1926 Convention in Chicago

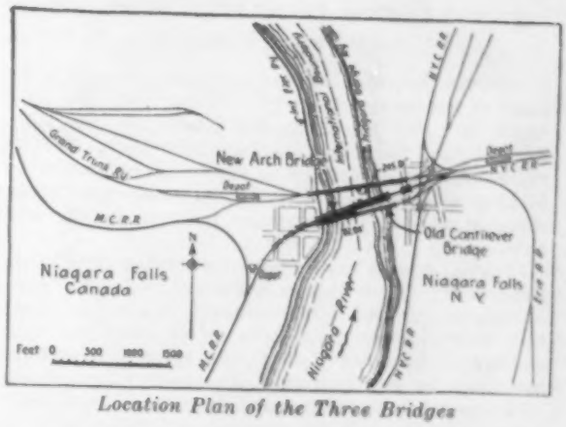
The board of directors of the national society, who held a meeting during the convention, decided on Chicago as the place for the national convention and steel exhibition in the fall of 1926.

Gas Cuts Bridge Into Scrap

Acetylene Used on Cantilever Structure at Niagara—Most of the Steel Salvaged

BY ORRIN E. DUNLAP

A VERY unusual thing is being done in the Niagara gorge in that the famous cantilever bridge is being taken down by use of the acetylene torch. This great bridge, erected in 1883, ever since has furnished the Michigan Central Railroad a means of crossing the Niagara River. Owing to the increased weight of rolling stock and the constant lengthening of trains a new bridge was made a necessity, and the fine new arch bridge that shows through the cut-out section of the cantilever in the illustration was formally opened for traffic on Feb. 16.



Location Plan of the Three Bridges

When the torch was applied to the cantilever, the start was made over midstream at the center, where the connecting truss was cut away. A portion dropped into the river, but practically all of the steel in the old bridge is being salvaged as scrap. Through piece by piece the flame of the torch eats its way, and day by day the opening at the center becomes greater, indicative of the gradual passing of the old structure. On each side of the river, on the debris slopes of the river bank, great false works of timber have been built to support the shore ends of the arms.

Similar false works were used in the erection of the bridge, which was built out from either end and joined by the truss in the center.

Three bridges show in the picture. The cantilever bridge in the foreground had a span of 439 ft. between inner edges of the piers and measured 211 ft. in clear height above the water. The total length of the bridge was 910 ft., of which the two river cantilever arms were 175 ft. each, the central span 120 ft., the two shore cantilever arms 195 ft. each and the section over each pier 25 ft. Designed originally to carry two 66-ton locomotives on each track, followed by a train weighing 1 net ton per ft., this bridge had to be strengthened only 17 years after being built, by the addition of a center truss between the two original outside trusses. This increased its capacity 50 per cent, but even the larger capacity was outgrown some years ago.

To replace it, the steel arch bridge which our picture shows, close beside it, has been erected with a span of 640 ft., and with the rails about 240 ft. above the water. This bridge has a total length of 975 ft., and has recently been completed. Its span is the greatest of any arch bridge in the world, with the exception of the Hell Gate Bridge, New York, which measures about 992 ft. between abutments. Of course, both these bridges will be far eclipsed by the new structure now being started over an arm of Sydney Harbor, Australia, in which a span of more than 1600 ft. will be covered by a single arch.

Beyond these two bridges the illustration shows an arch bridge of the Grand Trunk Railroad system, which has a span of 550 ft. and occupies the site of a previous bridge erected many years ago. All three bridges, as will be noted from the diagram, connect Niagara Falls, N. Y., with Niagara Falls, Canada.

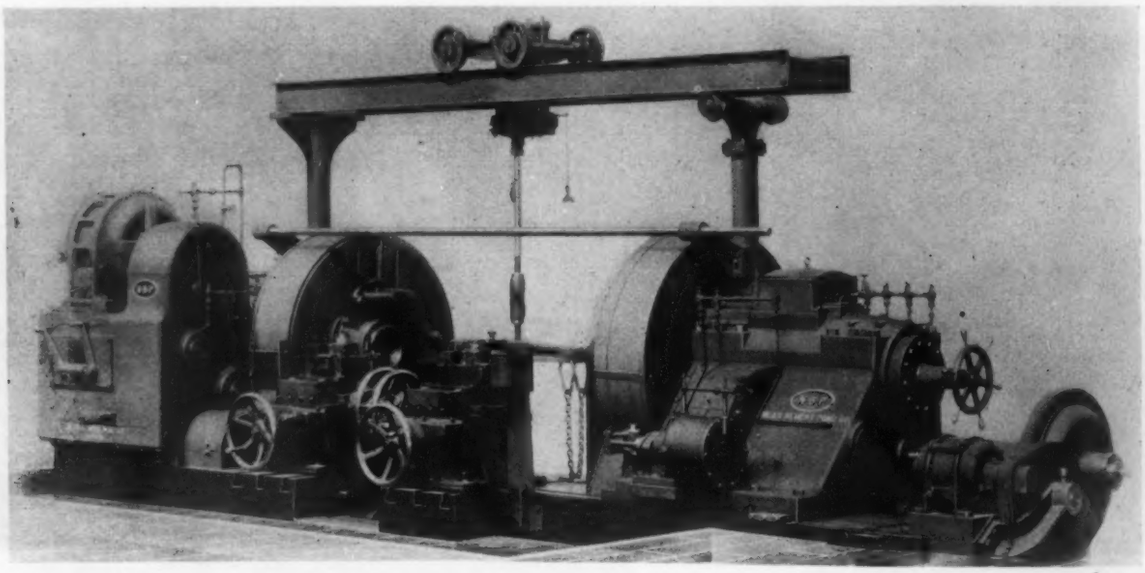
A surface air cooler, electric heat-treating furnaces and control equipment was exhibited by the General Electric Co. in booths Nos. 128 and 129, 134 and 135 at the Midwest Power Show and Mechanical Exhibit, Milwaukee Auditorium, Milwaukee, May 18 to 25. The heat-treating exhibit consisted of a 6-kw. electric furnace and a 5-kw. air tempering oven, both equipped with automatic control and in actual operation. The control equipment consists of a panel board, mounting starting devices, electrically connected to a motor so arranged as to show overload conditions.

HEAVY CARWHEEL LATHE

Improved Features Permit of Increased Power—New Turret Tool Post

Heavier construction and increased power are features of the open-center type carwheel lathe illustrated which is being placed on the market by the Niles-Bement-Pond Co., 111 Broadway, New York. The machine, which is designated as the No. 4, is intended for turning wheels from 26 to 52 in. in diameter, when mounted on axles having either inside or outside journals.

Special care is said to have been taken to eliminate unnecessary power losses. The main driving gears have been arranged to reduce spindle bearing pressures, the internal gear face plate drives employed being claimed to be unusually efficient. Heavy end-thrusts are taken by ball bearings. The unit system of construction has been adhered to, all parts of the machine being accessible. Power traverse and clamping to the sliding headstock, semi-automatic driver dogs, wheel hoist, turret tool posts and automatic lubrication, are among the time and labor saving devices incorporated.



The Motor Is Mounted on the Drive Box With Which It Forms a Self-Contained Unit. The right-hand headstock is traversed along the bed by power through a large screw, and a feature is the torque-limiting friction provided. A special lubricating system has been devised, and the four-sided flat turret tool post used is of new design

The machine is driven by a 50-hp. motor mounted on the drive box with which it forms a self-contained unit. The drive box is totally inclosed, jig drilled and planed so that a speed box of the constant-speed or adjustable-speed type is interchangeable with the headstock. The gears, which are of steel, are mounted on large diameter shafts which run in bronze-bushed bearings; overhung gears have been eliminated, and each gear is mounted against a shaft bearing.

The left-hand headstock is stationary and the right-hand headstock is movable, being adjusted to a sliding fit on the bed. It is secured to the bed both front and back by long shoes sliding in large tee slots, the clamping surfaces of the tee slots being provided with renewable steel liners. The face plates, one on each head, are mounted on large spindles and are driven in unison by steel internal gears bolted to them. The driving pinions are of forged steel and are mounted on an auxiliary shaft located at the front of the machine about on a line with the tools. A large self-alining ball-thrust bearing takes the end thrust of each spindle, these bearings being claimed to absorb but one-seventh of the power consumed by a plain step bearing. Four of the company's semi-automatic drivers, fitted on each face plate, grip the rims of the wheels, these drivers being adjustable radially.

The right-hand headstock is traversed along the bed by power through a large screw driven by a separate motor located at the end of the bed. A self-alining ball bearing takes the thrust from this screw. A safety feature called a torque-limiting friction is located on the end of the screw and can be adjusted so that the drivers on the headstocks can be brought up against the wheels with just the proper amount of lateral thrust to grip the wheels firmly. When the headstock is withdrawn this slip friction becomes a positive clutch. An electric switch acts as a safeguard against accident by limiting the lateral motion of this headstock. Pneumatic power clamps, one at the front and one at the back, clamp the right-hand headstock to the bed simultaneously. An electric clamp can be used also.

A special automatic lubricating system has been developed. A geared pump keeps the oil level in a large tank located in the upper part of the drive box filled to the high level of the lubricating system. From this tank, trunk lines carrying adjustable-sight feed lubricators supply each bearing with oil. Gear trains are flooded continuously. Used oil from both headstocks drains to a reservoir under the floor where it is filtered and again pumped to the upper tank.

A four-sided flat turret tool post of new design carries the four cutting tools for roughing, flange roughing, flange and tread finishing, and chamfering operations. Each tool when indexed comes into its cutting position with a minimum amount of horizontal adjustment. Each tool post is mounted on a lateral feed slide which fits into the top surface of a cross feed slide. The wearing surfaces of both cross slides and lateral feed slides are covered by renewable hardened steel plates. The cross slides provide in and out adjustment for setting the depth of cuts. They are mounted directly on top of heavily built bases which are adjustable on the bed by rack and pinion to accommodate different size wheels.

There are power lateral feeds to both right and left-hand tool rests. Feed ratchets are totally inclosed and so arranged that feed may be thrown on or off by means of a pawl which also controls the direction of feed. An accessible feed change disk facilitates changing to any of the six available feeds, which range from 3/32 to 9/16 in.

Furnace Lining Wears Unevenly

Temperature and Shape of Lining After Fourteen Months Operation—Suggested Method of Control

BY S. P. KINNEY*

DURING an investigation of a 300-ton blast furnace, which included a study of the reactions taking place at various planes (levels) therein, some interesting information was obtained as to the thickness and temperature of the furnace lining at a number of points between the tuyere level and the stock line, after the furnace had been in operation for 14 months. The temperature was taken at certain distances from the inside of the steel shell to the inwall. These data may be of interest to blast furnace operators as a possible means of determining the condition of furnace linings by means of temperature readings. During this period the furnace produced 121,846 tons of foundry iron from Southern red and brown ores. Details of this campaign follow:

Charge and Production During 14-Months Run

Blast number	14
Period in blast to date of test, days	436
Charge, tons:	
Ore	234,989
Nodules	93,911
Limestone	100,815
Scrap	5,796
Coke	174,708
Total charge	610,299
Iron produced, tons	121,846

How Temperature Readings Were Taken

Locations of four holes drilled for the purpose of taking readings are shown in Fig. 1. The steel shell was cut at the points indicated. Three-inch holes were drilled through the lining of the furnace. The thickness of the brickwork was measured, and temperatures were taken at intervals as the drilling progressed. The thermocouple was placed at the face of the hole and buried in drillings. The hole was then plugged with asbestos to prevent any gas leaks. The temperature was then read and drilling continued.

The position of the holes drilled, the thickness of the wall and the temperature at the inwall are given in Table I, while Fig. 2 and Table II show the temperature readings recorded at the face of each hole as the drillings progressed.

Action of Stock on Furnace Lining

Fig. 1 shows the position of the various test holes and the probable outline of the inwall. Below the armor plate (hole 1) the wall had been cut out 12½ in. This was caused by material sliding off from the bell and falling against the wall. The thickness of the wall at hole 2 was found to be normal, as there was no wearing away of the brickwork. Hole 3 showed that 8½ in. of brickwork had been worn away; the wall was 32 in. thick at this point. The lining at hole 4 was 26 in. thick; 14½ in. of brickwork was lost.

Temperature and Life of Furnace Lining

The temperatures observed at various points in the lining, as given in Table II, have been plotted in the curves of Fig. 2. As would be expected, the temperature of the inwall increased with the distance from the stock line.

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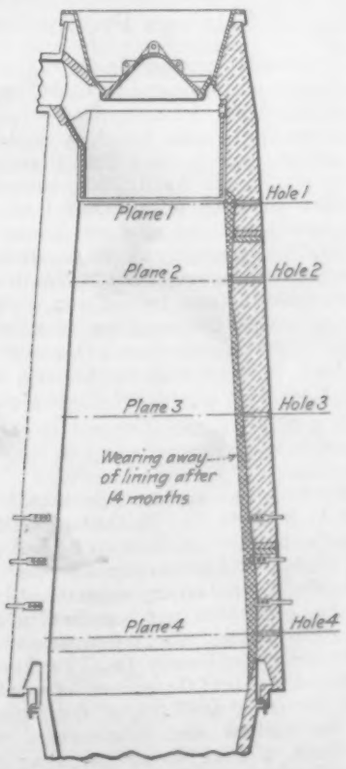


Fig. 1 (Left)—Is a Partial Section of a Blast Furnace, Showing Condition of the Lining After a 14-Month Campaign. The cross-hatched area had been worn away

Fig. 2 (Below)—Shows the Relation Between Temperature of Furnace Lining and Distance from Inside of the Steel Shell of the Furnace

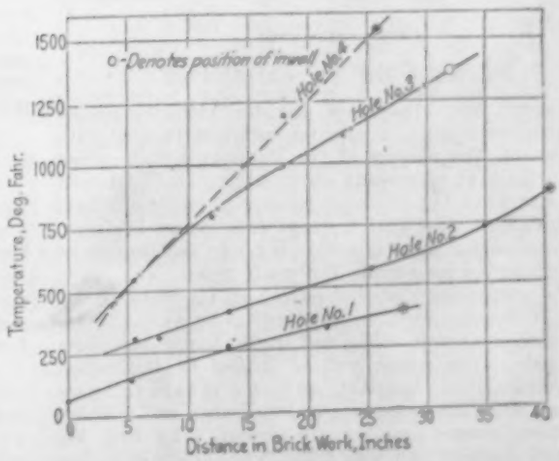


Table I.—Thickness and Temperature of Furnace Wall

Hole No.	Position of Holes: Distance Above Tuyere Level, Ft.	In.	Distance Below Stock Line, Ft.	In.	Thickness of Steel Shell, In.	Packing Space, In.	Thickness of Brick Lining When Drilled, In.	Original Thickness of Brick Lining, In.	Lining Reduced During Operation, In.	Temperature of Atmosphere, Deg. Fahr.	Temperature of Outside of Steel Shell, Deg. Fahr.	Temperature of Inside Wall of Furnace, Deg. Fahr.
1	60	4	3	0	5/8	5 3/8	28	40 1/2	12 1/2	58	65	400
2	53	4	10	0	3/4	2	40 1/2	40 1/2	....	69	90	870
3	41	9	21	7	3/4	1 1/4	32	40 1/2	8 1/2	76	125	1,365
4	19	3	44	1	7/8	...	26	40 1/2	14 1/2	90	130	1,538

The necessity of having 40 in. of brickwork is shown by the temperatures recorded at hole 3. At this point there was 32 in. of brick, and 20 in. of this was found to be at a temperature about 800 deg. Fahr., a low red heat. The removal of 10 or 12 in. more at this point would cause a hot shell, which would necessitate the use of water.

It is of great interest to the blast furnace operator to know just how long a lining will last, and to know at any time in a campaign just what condition the lining is in. It would be easy to obtain this information by means of a few standard temperature readings taken on a new lining. Such readings could be compared with those taken later in the campaign. To obtain the readings it would be necessary only to drill ¼-in. holes in the shell and lining. If at a later date it was suspected that any area on the shell was becoming overheated, a series of small holes could be drilled through the shell a few inches into the lining. Readings taken over this area could then be compared with those obtained on the new lining. With these data at hand, the thickness of the brickwork could be closely estimated. This method would provide data that would indicate to the management whether the lining was being worn away excessively at any one point, or whether the overheating was due to a crack in the brickwork. Improper working of the furnace might be detected and corrected before the condition had gone far enough to cause the loss of a lining.

Table II.—Temperature of Furnace Wall, at Holes No. 1, 2, 3 and 4, at Various Distances from Inside of Steel Shell, Deg. Fahr.

Distance in Brick, In.	Hole No. 1	2	3	4
0	70	...	...	...
3¼	...	...	300	...
4	...	...	460	...
5	138	...	...	...
5½	...	304	...	448
6	...	...	570	...
7½	...	306	...	...
12½	...	...	622	796
13½	266	407	...	...
18	...	...	994	1,193
20	...	...	1,043	...
21½	330	...	...	...
23	...	...	1,110	...
23¼	...	...	1,141	...
25½	...	563	...	...
26	...	...	...	1,538
28	400	...	...	...
30	...	...	1,308	...
32	...	...	1,365	...
35	...	775	...	...
40½	...	870	...	...

To Extend Terminal Railroad Facilities

ST. LOUIS, May 26.—The St. Louis Terminal Railroad Association composed of trunk lines entering St. Louis, has voted to increase its bonded indebtedness from $50,000,000 to $100,000,000. This increase will be used in extension and improvements of terminal railroad facilities. The present facilities of the association comprise a modern union passenger station used by all the lines; two bridges crossing the Mississippi River; three belt lines on each side of the river connecting 23 railroads; three river docks with superior equipment; freight houses for less-than-carload shipments; team yards for carload freight, an ice plant for refrigeration; and extensive yards for assembly, classification and distribution of carload lots.

The St. Louis railroad zone and industrial district cover 75 square miles with 500 miles of track on the west side of the river and 50 square miles, with 350 miles of track on the east side. Two and one-half million carloads of freight were interchanged with connections in the past year.

Plates Sold to Vancouver

SEATTLE, May 21.—Orders for steel are being placed only for the smallest quantities sufficient to meet current wants. The placing of the Vancouver plate order at a price that represents about 1.60c., at Pittsburgh mill, may have the effect of further unsettling prices, in spite of the fact that it represents export business. The demand for materials entering into building work is fairly active, especially for small pipe.

The plates for the Vancouver, B. C., water lines, about 5500 tons, went to the leading interest, the reported figure being 2.25c. flat, f.o.b. Vancouver dock, duty paid. The plates will be hauled to destination in the boats of the company, so that it is hard to figure out just what the price nets at Pittsburgh mill. There was keen competition for the order. The first bid from an English mill was 2.38c. Vancouver, c.i.f., but the domestic mill very promptly met this price, and may have gone slightly under it. The plates are to be delivered in five equal shipments, and the contract calls for the first shipment to be made from the mill on June 10. The local demand for plates is very quiet, and there are no large jobs in sight. Plates are quoted at 2.45c. to 2.50c.

Malleable Castings Production

Output of malleable castings in April is reported by the Department of Commerce at 62,962 tons from 143 plants, of which five were reported idle. This is the largest figure since January and, with that exception, is the largest figure in more than a year. March showed 61,245 tons, while April, 1924, showed 58,634 tons. Shipments in April were 62,658 tons. Orders booked were 58,001 tons, and production was 55.1 per cent of the 114,195-ton capacity of the plants reporting.

In a comparative summary for 130 identical plants, production was 59,046 tons, two of the plants being idle. Here again, with the exception of January, this was the largest total in more than a year. Shipments were 58,610 tons; orders booked, 54,145 tons, and operation was 55.4 per cent of the 106,425-ton capacity.

Experience with the sand cutting machine at the plant of the A. B. Stove Co., Battle Creek, Mich., has been investigated by the A. C. Nielsen Co., an engineering firm of Chicago. Also results compiled and discussed by H. Matthews, foundry superintendent of the stove company, have been put together in pamphlet form. The sand cutting machine was made by the American Foundry Equipment Co. Twenty tons of iron were poured per day; the amount of good castings averaged 65 per cent; sand for 36 floors was cut in 1½ hr. by the machine, and, as compared with sand cutting by hand, a total saving per year of nearly $28,000 is claimed.

DR. C. T. WANG, who received part of his higher education in America, is not only a statesman who has acted in notable capacities for the Republic of China, but is interested in business and is vice-president of an import and export company at Shanghai. He was born in Ningpo, Chekiang, in 1882. Later he entered Peiyang University, at Tientsin, then considered the most up-to-date institution for higher education in China. After his graduation he taught in various schools and then went to Japan as a Y. M. C. A. secretary. In 1907 he came to America as a self-supporting student at the University of Michigan. From 1908 to 1911 he attended Yale University, obtaining the degree of A. B. in 1910. He was actively identified with the leaders of the revolution which established the Republic, after his return to China. When the first parliament met in 1913 he was elected vice-speaker of the Senate.

Industrial Progress in China

BY DR. CHENGTING T. WANG

TO those who are accustomed to form a gloomy picture of China from the vivid recitals of civil strife, floods and famines as well as other calamitous visitations published in the American press, the title of this paper may appear somewhat presumptuous. As a matter of fact, however, no apology is required or even needed. Civil wars, floods, famines, and other necessary evils may come and go, but a nation of four hundred million patient, industrious, peace-loving and thrifty people who have consistently obeyed the Fifth Commandment, and who have witnessed the rise and fall of their Babylonian, Assyrian, Egyptian, Greek and Roman contemporaries do not perish so easily.

It is not proposed here to traverse the entire field of China's progress, comprehensive information regarding which may be found admirably set forth in an illustrated 475-page volume entitled "China Awakened" by my friend Dr. M. T. Z. Tyau, a jurist and publicist of international reputation. The present discussion will merely survey the nation's industrial progress. While it might be an exaggeration to characterize this progress as an industrial revolution, a more fitting description would probably be *industrial awakening.*

To begin with, from an agricultural country the Republic of China is slowly becoming industrialized. Endowed with rich, natural resources and teeming with an industrious population, it seems that the day will not be far distant when China may be classified by the historians of the world as a manufacturing country. Whether the dawn of that day will occur in our own lifetime or that of our children will depend upon the cooperation or otherwise, of the Powers enjoying treaty relations with the Asiatic Republic. Among the more outstanding features of China's industrial development we may review the following:

(1) The growth of the cotton industry and the prosperity of cotton mills. [Discussed in detail.]

(2) The increase in the number of modern factories and their exported output. [Discussed in detail.]

(3) The increase in the volume of Chinese exports. [Discussed in detail.]

(4) The increase in the number and strength of modern, as distinct from native-style, Chinese banks.

(5) The increase in the number of operated mining areas and their output. Following are the latest available official, as well as semi-official, statistics:

No. of mining areas	1,966
No. of engineers	2,142
No. of technical staff, etc.	9,308
Annual output of coal, tons	19,954,529
Annual output of iron ore, tons	1,153,491
Annual output of antimony, tons	12,062
Annual output of tin, tons	9,069

(6) The growth of such important industries as ironworks and dockyards. Of the first there are at present three in operation, the premier of which is the Hanyehping Company, which owns an iron and steel works in Hanyang, a rich iron mine and another ironworks in Tayeh, and a rich colliery in Pingshiang, also manganese mines and a low phosphorus iron mine, all within a distance of 200 miles of each other. Being under financial obligations to Japanese financiers, the company exports annually 50,000 tons of pig iron and 300,000 tons of iron ore to the Japanese steel plant at Yawata.

So far as they go, the results achieved appear to be satisfactory enough, but they can ill bear comparison with those in other countries. But given, say, 20,000 additional miles of railway, 100,000 extra miles of good roads and highways, a decade of peace and order and a substantial amount of assistance from the principal treaty Powers like Great Britain, the United States and Japan, the results already attained can be increased several fold without much difficulty. Consequently, what China needs is greater encouragement and less obstruction. In closing this paper we would like to enter a plea for greater international cooperation and good will.

[This is an abstract of a paper presented at the annual spring meeting of the American Iron and Steel Institute, in New York, May 22.—EDITOR.]

Indian Iron and Steel Interests Merge

The Indian Iron & Steel Co. and the Bengal Iron Co. have merged their interests, according to reports to the Indian press, forwarded to the Department of Commerce. At a meeting of the Bengal Iron Co., held in London, it was stated that owing to the modern plant possessed by the Indian Iron & Steel Co., it can produce pig iron more cheaply than the Bengal Iron Co., but that the latter has a profitable business in its foundries, where iron is converted into finished articles, such as cast iron pipe, railroad sleepers, etc. Furthermore, it was claimed that although there was a dearth of orders for the sleeper department at that time, there were signs of improving business in that respect and that the general and pipe foundries were fully occupied. The demand for pipes in India is very heavy and instructions have been given by the Bengal Iron Co. for the erection of an additional pipe foundry.

The number and value of electric hoists ordered in April were the same as in March, according to the records of the Electric Hoist Manufacturers' Association.

COL. HARLOW D. SAVAGE, vice-president Combustion Engineering Corporation, New York, prior to his entrance into the pulverized fuel field, devoted most of his time to the refractory industry. Together with the late E. S. Hutchens, he organized the Refractory Manufacturers Association and was its first president. In 1914 he became vice-president of the American Arch Co., and about two years later vice-president of the Locomotive Pulverized Fuel Co. When the Combustion Engineering Corporation purchased the Lopulco Pulverized Fuel Systems in 1920, Colonel Savage became directing head of the pulverized fuel division. He has since become a vice-president of the company and also of the Raymond Brothers Impact Pulverizer Co. In his present connection he recently developed the special type of furnace wall which he discusses in his paper. He is the author of numerous articles on various aspects of power plant development and on the invitation of the British Association for the Advancement of Science, he recently presented a paper on the utilization of pulverized coal at the annual meeting last year in Toronto, Canada.

Water-Cooled Boiler Furnace Walls

BY H. D. SAVAGE

BOILER furnace efficiency must naturally resolve itself into three things:

1. A low carbon loss through the ashpit.
2. A high CO_2 in the firebox.
3. Complete combustion in the furnace.

If a high CO_2 is produced in the firebox, an intense thermal condition prevails and, while it has been possible to develop refractory materials that withstand extremely high temperatures in the laboratory, these same high heat-resisting refractories may not meet the severe conditions of operation, due to the influence of the fluxes in the ash. This is especially true where high sulphur in the form of pyrites occurs in the coal—practically a standard condition.

Study of means for reducing the stress to which the refractories are subjected or means of replacing the refractory walls leads logically to consideration of:

1. Hollow-wall refractory furnaces.
2. Steam-cooled walls.
3. Water-cooled walls.

Hollow walls made of refractory materials were found more practical with pulverized fuel or fuel oil than when stokers were the firing medium, due to the fact that, in pulverized fuel and fuel oil firing, air infiltration is not extremely detrimental as in stoker firing, and that in stoker firing, if the inner lining of the hollow walls is made sufficiently thin so that the air-cooling might be effective on the refractories, then the necessities of cutting away clinker or the abrasive action of the moving fuel took away the wall as quickly as the extreme thermal conditions would have affected a solid wall.

As to steam-cooled walls, or, more properly, the placing of the super-heater so as to form a wall surface, the amount of cooling obtained from this source must naturally be limited, as the area possible to expose in the furnace is governed by the amount of superheat required and, up to the present, results obtained would indicate that this method of cooling is not yet out of the experimental stage.

Several attempts have been made to develop some method of water-cooling side walls, either ordinary boiler tubes having been placed just inside an ordinary solid brick wall, or so placed that shaped brick filled the openings between the tubes, or the tubes were entirely faced with brickwork. Each of these methods presented difficulties, either of structure or of operation.

In 1923 Thomas E. Murray conceived the idea of welding light fins on ordinary boiler tubes and placing them in the furnace in such manner that the fins slightly overlap between the tubes and form a continuous metal wall. Much doubt was expressed as to the heat transfer value of these fins and fear was entertained that, due to this fact, the fins would rapidly burn off or be eroded.

However, three 1500-hp. stoker-fired, Springfield cross-drum boilers, at the Hell Gate Station of the United Electric Light & Power Co., were equipped with these Murray fin walls and have been in continuous operation since then with practically no deterioration of the fins or the tubes after 19 months' operation. Many experiments have been made on these boilers during that time, so that the Murray fin walls might be tried under extreme conditions of operation.

Fig. 1 is an isometric view of the screen installation at Hell Gate. The side walls consist of 4-in. tubes arranged vertically on each side of the furnace and spaced on 7-in. centers. Each tube has two longitudinal steel fins welded on it, diametrically opposite each other, and when placed in the boiler furnace the fins overlap, thus presenting a continuous water-cooled surface to the radiant heat of the furnace. The lower portion of the tube is covered by fireclay tile for a short distance above the stoker. This extends along a horizontal line the entire length of the furnace. These brick are so placed in stoker installations along the line of the fuel bed, but are not used in pulverized fuel furnaces.

Tubes Carry Part of Circulation

The water in the tubes forms a part of the regular boiler circulation, the lower ends of the tubes being connected by headers leading to the mud drum. The upper ends of the side-wall tubes are connected to a header, which in turn discharges into the boiler drum through a special set of nipples and headers in front of the drum.

The water-cooled side walls not only replace practically all the brickwork in the side walls, but afford considerable protection to the front and rear walls by absorbing the heat which they reflect and thus lowering the temperature of the face of the wall.

A tendency at present is toward preheating combustion air. Pulverized fuel firing in combination with air heaters makes possible very high ratings and produces naturally high efficiencies. This means a most intense heat in the furnace, making water-cooled walls practically imperative. With water-cooled walls installed under such conditions, the units may be kept

*This is a brief abstract of one of the papers read May 22 before the American Iron and Steel Institute, New York.

on the line for long periods without any more liability of shutdowns than is caused by the boiler itself under present conditions.

Summary of Tests

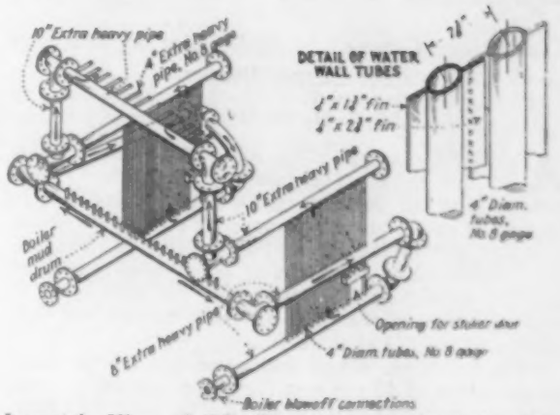
Data Collected	At Top of Third Pass					
Boiler number	11	5	11	5	11	5
Per cent rating	152	155	202	204	252	252
Flue gas temperature, deg. Fahr.	490	523	536	568	565	604
Draft, in. water	0.28	0.41	0.76	0.87	1.29	1.30
CO_2 per cent	12.7	13.4	12.9	13.3	13.8	14.8
O_2 per cent	5.9	5.9	5.9	6.6	5.1	4.4
CO per cent	0	0	0	0	0	0
	Above Superheater					
Flue gas temperature, deg. Fahr.	850	991	959	1119	1069	1181
CO_2 per cent	13.0	13.5	12.5	12.0	12.9	14.4
O_2 per cent	5.9	5.7	6.7	7.1	6.3	5.8
CO per cent	0	0	0	0	0	0
	Below Superheater					
Flue gas temperature ,deg. Fahr.	1038	1273	1184	1380	1274	1469
CO_2 per cent	13.3	13.5	13.3	12.5	13.9	13.8
O_2 per cent	5.9	5.9	5.9	6.6	5.1	4.4
CO per cent	0	0	0	0	0	0
	General Data Collected or Computed					
Superheat temperature, deg. Fahr.	602	670	632	689	641	698
Draft in furnace, in. of water	0.05	0.06	0.09	0.12	0.19	0.15
Drop in flue gas temperature through superheater, deg. Fahr.	188	282	225	261	205	288
Draft increase through superheater, in. of water	0.01	0.01	0.02	0.03	0.06	0.07
Duration of tests, hr.	2	2	3	2	2	2.5

Boiler No. 11 is equipped with fin-tube side walls, fin-tube back wall and water screen over the bottom of furnace.

Boiler No. 5 is equipped with water screen over bottom of furnace and water screen over back wall. Side walls refractory.

Discussion

George A. Orrok, consulting engineer New York Edison Co., New York, stated that the boilers equipped with the device described in the paper, and put into service in the plants of his company, have given exceptionally good service. After nearly two years of operation, there seem to be no signs of deterioration in either the tubes or the fins of the wall construction. The maintenance of this portion of the furnaces is only a small fraction of the erstwhile maintenance costs for brick walls.


10" Extra heavy pipe
4" Extra heavy pipe, No. 8 gage
DETAIL OF WATER WALL TUBES
4" x 12" fin
4" x 24" fin
10" Extra heavy pipe
4" Diam. tubes, No. 8 gage
Boiler mud drum
6" Extra heavy pipe
Opening for stoker drive
4" Diam. tubes, No. 8 gage
Boiler blowoff connections

Isometric View of Fin Tube Screen Installation Details, Showing Overlapping of Fins

He explained this in part by stating that, in the ordinary type of furnace, the lower rows of tubes ordinarily perform about 50 per cent of the work of evaporation of the water, because they receive the hottest part of the flames and products of combustion. As a result, they scale up rapidly and considerable erosion occurs. This means deterioration and great cost for maintenance. The absorption of a considerable quantity of the heat from the products of combustion by the fins and tubes of the new walls takes away a large percentage of the work done in the lower rows of boiler tubes, and reduces the scaling, erosion, deterioration and maintenance costs of those tubes.

Labor Conditions Slightly Better in Pennsylvania

HARRISBURG, PA., May 25.—The semi-monthly report of labor conditions in Pennsylvania to R. H. Lansburgh, secretary of Labor and Industry, for the period ended May 15, seems somewhat more optimistic concerning conditions in the iron and steel trade. Several offices report an inability to furnish the required number of skilled workers, while others believe that improved conditions are just around the corner.

The Pittsburgh report expresses the belief that an early increase is certain. The electrical and pipe-line plants seem to be in fair shape, while the steel mills are operating fairly well. Jobbing machine shops are said to be working to capacity.

Reading's steel mills are working full time, with a slight decrease in forces. The Reading Steel Casting Co., which has resumed operations after several months idleness, needs workers. All hardware plants are busy. Allentown is finding difficulty in obtaining competent help. However, there seems to be a slight slowing up of the metal industry. There have been some calls for help, but wages offered are not high.

Erie finds a slight shortage of first-class machinists and metal pattern workers, but a surplus of foundry workers is reported. Lancaster finds the demand for workers picking up gradually, but not to such an extent as to disturb the available local supply. Scranton shops are working full time, but no additions have been made during the half-month.

In the Philadelphia district the Westinghouse and General Electric firms are declared entirely out of the market for help, while the Baldwin Locomotive Works is "again marking time." Some workers have been referred to shipbuilding firms, and some others to various other types of manufacturing plants. "There seems to be a shortage of first-class journeymen machinists, the better grade being already employed," the report concludes.

Harrisburg reports that its iron and steel industries have taken no further steps toward curtailment, but that mills fabricating from raw material have not shown any perceptible enlargement of volume. Manufacturers finishing and assembling machinery and parts are declared to have been going strong, working regular forces full time and adding men from time to time.

Johnstown's activities in its iron and steel industries declined still further during the half-month, but the bottom seems to have been reached. Foundries and machine shops in the Williamsport district report local business on the decline.

A 100 per cent record for industrial safety was achieved in April by the Universal Portland Cement Co., according to a report made public this week. All its mills, located in various sections of the country, operated during April without having a single employee lose any time on account of accidents. "The month of May marks the twenty-fifth anniversary of the organization of the Universal Portland Cement Co.," according to B. F. Affleck, president of the company.

In a business leaflet on sales quotas issued by the Metropolitan Life Insurance Co., New York, and prepared by the Policy Holders Service Bureau, the procedures of a large office equipment company are described. Some of the forms used are illustrated, in showing the manner of establishing and keeping tabs on quotas. Copies of the pamphlet may be obtained from the Metropolitan company.

DOUBLE DUTY FIRE BRICK

Old Bricks Crushed to Make Mortar and Also for Burner Blocks

BY H. M. THOMPSON*

ANOTHER example of the successful use of crushed old fire brick as a ganister for furnace maintenance and for making special tile is being demonstrated in an oil-burning furnace for making tie plates, operated at the plant of the Sellers Mfg. Co., Mayfair, Ill. Considerable trouble was experienced with fire clay joints between the high-grade fire brick used in this furnace, in that the fire clay burned out and shortened the life of the brick.

The fire brick is now laid up with a mortar made of a mixture of 40 per cent Hytempite and 60 per cent crushed old fire brick (150 mesh). In using this mortar, joints are made not to exceed ⅛ in. thick. The furnace in which this construction is used measures 38 ft. long, 8 ft. wide and 5 ft. high. The hearth is of silica sand. There are three oil burners and five charging doors through which the material is fed into the furnace, in the usual form of boxes made of scrap iron and steel, tied together and brought to a welding heat.

Inner side wall linings are laid up 9 in. thick, all brick being 9 in. header courses. The furnace is operated until these brick are burned back to 1½ in. thick, before rebuilding. Figs. 1 and 2, showing samples of the burned out brick work, indicate that the joint stands up as well as the brick and that the whole lining burns down uniformly. The service record with this character of lining shows more than double the service (twelve weeks) from the brick when laid up in this special mortar than when laid up with fire clay (five weeks).

In the sectional view of the burned out lining, the thinnest section is about 1½ in. thick and the bottom of the section, about 3 in. thick, is at the slag line.

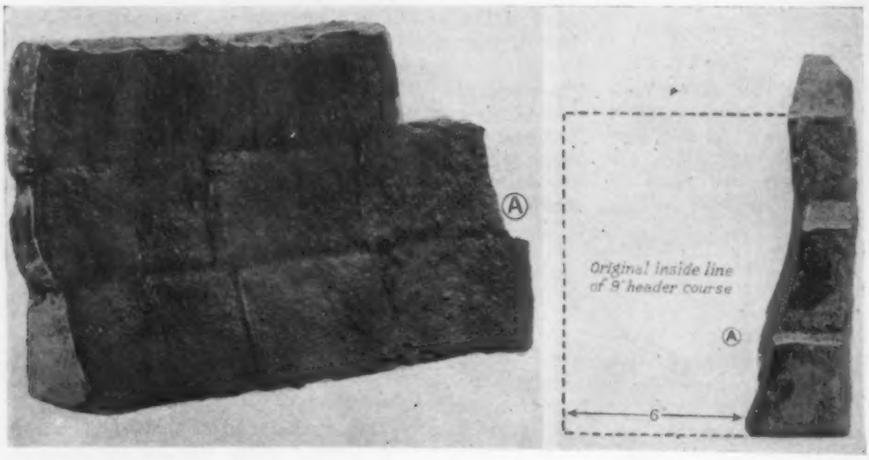
Burner Blocks

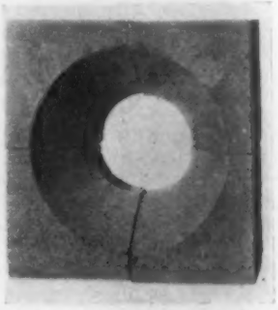
In this same furnace, burner blocks of a similar mixture have shown a considerable saving in first cost as compared with special shapes, and also greatly increased service. In making the burner blocks, the old fire brick taken from the furnace is dumped into a ball mill which has a capacity of 5 tons per hr.

Wood molds for these blocks cost $5 and many blocks have been made from a single set of molds. The set of blocks illustrated is composed of four sections measuring, when assembled, 24 x 24 x 9 in. thick. The old fire brick is reduced in the ball mill to ⅛ in., including all fines down to 250 mesh. Hytempite is diluted in a mortar box to the consistency of a pan-cake batter, and the crushed fire brick is gradually added and thoroughly mixed until it is just moist enough to bond, about 75 per cent crushed fire brick being used.

The mixed material is then placed in the molds, firmly tamped and allowed to set for 2 or 3 hr., after which the molds are removed. The blocks are allowed to stand ten days to get thoroughly air-set. They then can be handled without danger of fracture. When set in the furnace at the burner ports heat can be applied at once.

*President H. M. Thompson Co., Chicago.





Figs. 1 and 2 (Left) Show Burned Out Brickwork, the Thickness Having Been Reduced, in Spots, to 1½ In.
Fig. 3 (Above) Is a Burner Block Made in Four Sections

"Crodon"—New Process for Plating with Chromium

A new process has been perfected for plating various metal objects with chromium. It has been developed by Dr. Colin G. Fink, head of the division of electrochemistry, Columbia University, New York. He also recently announced the perfection of an electrolytic method by which rare ancient bronzes, corroded beyond recognition, can be restored to their original form. The new commercial process for plating with chromium has been perfected with the help of Dr. Fink's assistants and the research engineers of the Chemical Treatment Co., New York.

While the details of the process are not made public, the surface produced is said to be not only hard, but to be capable of assuming a dull gray appearance or a silver luster. It is claimed also that it will take a polish much more brilliant than nickel, with practically the same reflecting power as a first class mirror and that it will not tarnish or corrode under almost any circumstances. No polishing is ever required and it is pointed to as being capable of outlasting other similar surfaces.

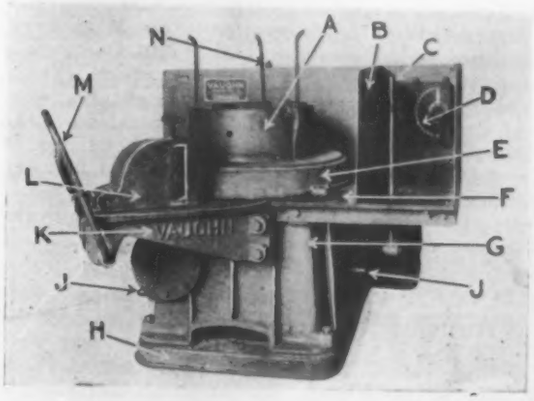
The trade name under which chromium plate is being produced is "Crodon" and the first plant for its production has been in operation for several months. It is reported that thousands of steel, iron, brass and copper articles for commercial use have been plated by this process.

A report that the Ford Motor Co. was to take over the West Leechburg Steel Co., Leechburg, Pa., has given officials of the latter company considerable annoyance because the report is without foundation. The Ford Motor Co. has not approached the West Leechburg company nor has the latter approached the Ford Motor Co. Apparently, the story found its origin in the fact that the West Leechburg Steel Co. lately has been producing some material for the Ford Motor Co., and a visit of officials of the Ford Motor Co. to the company's plate glass plant at Glassmere, Pa., a few miles from Leechburg, also was taken by local newspapers as pointing to a possible sale of the steel company to the automobile company.

COMPACT WIRE-DRAWING

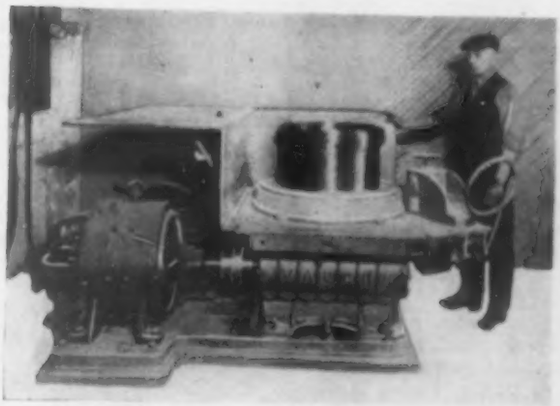
Self-Contained Machine with Individual Motor Drive and Safety Stop Device

A RADICAL departure in the design of wire-drawing machinery is found in a new machine brought out by the Vaughn Machinery Co., Cuyahoga Falls, Ohio, which has an individual adjustable-speed motor for each wire block. The types commonly used have a number of blocks in one frame, geared to one line shaft. A disadvantage of the single-speed multi-block type of wire machines, it is pointed out, is that one machine could not be made to fit exactly every condition, such as most suitable speed in drawing, and preparation and resulting physical properties of the wire. Lacking flexibility, a single-speed machine selected for drawing a certain kind and size of wire might lack efficiency when applied to drawing other wire that could be drawn at higher speeds. Wire can be drawn with this machine at higher speeds than heretofore possible with machines of this type, it is claimed, and because of the simplicity and ease of operation, as well as its speed, more wire can be drawn per man and per block.



In the View Above, A Is the Drawing Block; B, Sheet Steel Guard Plates; C, Starting Lever; D, Speed Adjusting Rheostat; E, Guard Ring; F, Top Plate; G, Main Frame; H, Base Plate; J, Oil Drains; K, Die Holder Support; L, Die Holder; M, Safety Ring, and N, Oil Filling Pipe

Below Is a General View of the Machine in Operation, Showing the Side Opposite That in the Detail at Left. The shape of the safety ring is indicated, at the man's left hand



In designing the new machine the company has had two ideas in mind: first, to provide a machine that can always be operated at the highest speed permitted by the physical properties of the wire and the desired quality of product; second, to eliminate the idle time before drawing periods. The adjustable-speed motor permits a wide range of working speeds and the drawing of wire in any grade or size within the machine's limits at the proper speed to meet specifications as to physical tests and appearance of finished product.

Another important advantage claimed for the adjustable-speed motor is that the motor and its control are designed to give a very slow starting or pulling-in speed of approximately 8 r.p.m. on the block, and a gradual and even transition is made from this to its higher working speed. Thus the slow starting has a tendency to eliminate the danger of wire being broken through being started through the die with a jerk.

Compactness is secured by having one casting serve both as a frame and gear cover, permitting placing machines side by side on 5-ft. centers. The main housing, a box-type oil-tight casting, with motor and control, are mounted on a one-piece bed-plate and the entire machine is above the floor line, eliminating a pit and requiring only a light foundation. This, it is pointed out, is a distinct advantage when machines are to be installed on upper floors. The drive from the motor is through a flexible coupling to a worm gear running in oil and mounted in the main housing and connecting to the block spindle. It is pointed out that the use of worm gears immersed in oil eliminates the noise and vibration caused by the use of spur or bevel gears and furthermore, because the teeth are always in mesh, the wire is pulled more steadily and smoothly through the die than with a straight tooth gear. This smooth pull decreases the wear on the die, while efficiency is increased by the use of oversized bearings on the block spindle and worm shaft. Ball bearings are supplied on the motor if desired.

The drawing block is slotted to accommodate three-armed spiders or strippers used with an overhead crane for the quick removal of the coil of wire after drawing.

There is a positive safety device with which the machine can be stopped very quickly. A safety bar or ring is connected at one end to the shaft of a drum switch and the other end is bent into the form of a ring through which the wire passes before entering the die. A slight pull on this bar will stop the machine within 5 to 6 in. travel on the block. It is stated that, should a workman be caught in a loop of wire, he cannot avoid striking the safety bar, which will stop the block by applying a dynamic brake to the motor before the man can be injured. When the safety contacts are closed, the motor cannot start until the main control is brought back to the "off" position. The safety bar, being in front of the machine, can be easily reached by the operator from any position. Dynamic braking is applied to the motor whenever the main controller is shut off, the action being the same as when the safety device is operated. With this quick stop no time is lost in waiting for the block to come to a standstill after the bundle has been drawn. The positive safety device, in connection with the slow, even starting, it is claimed, makes the machine safer to operate than the older types.

This machine is designed for ease in disassembling. With the removal of one key and a few bolts all parts except the worm shaft can be lifted out of the frame or off the base with a stripping crane, which eliminates hand lifting and blocking. The worm shaft can be taken out by hand. The motor, resistance grids and control are at the back of the machine in the open, so that they can be easily reached for inspection and repair.

The machine will be made in several sizes and to conform to a variety of specifications, the different sizes covering the field of work between No. 14 wire and 1-in. rods. Four standard gear ratios are available and are interchangeable in the same frame, permitting a wide range of speeds. A motor with a 2 to 1 speed range is standard equipment.

CLEAN COAL DISCUSSED

Main Topic of Southern Ohio Pig Iron and Coke Association Meeting

Great strides are being made by the Southern Ohio Pig Iron and Coke Association in its campaign to educate coal operators to produce clean coal having a low ash content, according to the report made at the spring meeting of the organization at the Hotel Gibson, Cincinnati, on May 27.

Coal men declared only a few years ago that it would be an impossible task to convince thousands of operators of the advantage accruing to them from the marketing of clean coal, said Ralph H. Sweetser, American Rolling Mill Co., Columbus, Ohio, president of the association, in telling of the work done by the coal evaluation committee. Yet, within the short space of three years, coal being shipped today from West Virginia and Kentucky mines is clean. Consumers should demand clean coal and, in turn, should be willing to pay a premium for the extra heat value to be secured from it.

Sulphur in Coal Exaggerated as Detriment

Results derived from tests made in the laboratories of the Ohio State University in cleaning coal were enumerated by Prof. Dana Demorest of that institution at the afternoon session, which was held in conjunction with the Ohio section of the American Institute of Mining and Metallurgical Engineers. Professor Demorest distributed data sheets illustrating the tests. In the discussion that followed it was brought out that, instead of sizing coal into a dozen sizes for cleaning purposes, three sizings are sufficient. Professor Demorest's tests were made exclusively with coal mined in Ohio.

The tendency toward improved types of stokers and pulverized coal equipment will enable consumers to get the proper value out of low quality coal, stated E. G. Bailey, Bailey Meter Co., Cleveland, in a paper read by George Coughlin, the American Rolling Mill Co. Mr. Bailey pointed out that "ash in the future will be of less importance, because stokers, pulverized coal burning equipment and furnaces are being developed that will handle coals having high ash of low fusing temperature with practically no ill effect on boiler capacity, combustion efficiency, firing labor or furnace repairs. There may be a slightly increased cost for removal and handling, but so long as there is some ash in all coal, the removal equipment must be provided and higher ash coals will not cost proportionately more for even this item." Mr. Bailey stated also that "sulphur has been penalized too much in steam coal. It has been considered the measure of clinker trouble, but the fusing temperature of ash should have been the factor for evaluating with respect to clinker."

Suggestion that purchasing agents should be educated in the economy of purchasing clean coal, even though the original purchasing cost may be slightly higher than the average market price, was made by J. P. Burton, Cleveland coal man. Mr. Sweetser, in discussing this point, emphasized that it is the task of the coal evaluation committee of the association to find out how much in dollars and cents can be added to the ordinary cost for low ash coal.

The most efficient separation of impurities from coal is by the gravimetric system, declared George R. Delameter, Cleveland, in a paper on "Gravimetric Tests of Coal." However, this is too expensive for cleaning large tonnages and its use must be confined to testing purposes. Mr. Delameter said that he found from experience that "the B. t. u. value of coal follows quite closely the ash and moisture content of the coal."

The effect of the hot weather of the week of April 21 on blast furnace production was related by Charles J. Rice, the American Rolling Mill Co., Ashland, Ky. Mr. Rice had prepared data showing that, between April 21 and 23, the amount of water going into the furnace with the blast rose from 39,717 lb. to 65,456 lb., due to the hot, humid temperature that developed. The result was a smaller production of pig iron and an increased consumption of coke.

President Sweetser Reelected

Mr. Sweetser was elected president of the association for another year. Other officers for the coming year are: George P. Hansen, American Rolling Mill Co., Ashland, Ky., first vice-president; G. E. Brandon, Ironton By-Product Coke Co., Ironton, Ohio, second vice-president; L. D. Heustis, Portsmouth By-Product Coke Co., Portsmouth, Ohio, third vice-president; W. T. Brown, Star Furnace Co., Jackson, Ohio, fourth vice-president; J. F. Savage, Hamilton Furnace Co., Hamilton, Ohio, fifth vice-president; C. R. Peebles, Engineers Sales Co., Ashland, Ky., secretary-treasurer.

W. W. Stevenson submitted his resignation as chairman of the coal evaluation committee due to business pressure. His successor will be named soon by President Sweetser.

Motion pictures of the operations at the Middletown, Ohio, plant of the American Rolling Mill Co., were a feature of the banquet in the evening, which was attended by members and guests. The pictures were shown under the supervision of A. B. Strickland of the publicity department of the company. A number of short talks relating to conditions in the coal industry constituted the rest of the banquet program.

A number of men were elected to membership in the association at the afternoon session.

Aims of Refractories Institute

Hon. William C. Sproul, former governor of Pennsylvania, as president of the American Refractories Institute, made the following statement regarding the plans of the organization: "This is an unselfish attempt on the part of a large number of men who are vitally interested in the refractories industry to meet the problems that arise from the present-day methods of quantity production. I predict that with the help of the new organization great economies will be effected through the development of superior products, lower costs of manufacturing, and a clearer understanding of the conditions under which the products will give efficient service in manufacturing practice. I hope that the consuming industries will recognize the merit of this undertaking and give the full cooperation that is necessary to success in industrial research of this broad scope."

W. C. SPROUL

Makes Garvin Wire Coiling Machines

Sleeper & Hartley, Inc., Worcester, Mass., manufacturer of wire coiling mahinery, announces that it has taken over from the Garvin Machine Co., New York, the latter's line of spring and wire coiling machines. Users of the Garvin machines will now be able to obtain repair parts from Sleeper & Hartley, Inc.

April payrolls in 221 iron and steel plants are reported by the Department of Labor to have covered 289,381 employees, compared with 295,640 in the same establishments in March. The reduction was 2.1 per cent. The payroll during one week in April amounted to $8,766,175, compared with $9,009,725 in March, or a decrease of 2.7 per cent.

Wanted: More Shop Apprentices

Why the Metal Working Industries Face an Immediate Problem in Scarcity of Skilled Workers —And How It Can Be Solved

BY L. A. HARTLEY*
DIRECTOR OF EDUCATION, NATIONAL FOUNDERS ASSOCIATION

EVERYONE who is interested in American industry should bear in mind the recent statement of a well-known financial writer, "If every industry in this country attempted to run at full capacity, there would not be nearly enough labor to go around. An employment manager whose interests are nation-wide estimated a short time ago that a general increase of 15 per cent in production would absorb all available labor."

American manufacturers will enter the race for the returning world markets with four heavy handicaps:

First, higher standards of living.

Second, a declining labor market due to restricted immigration.

Third, a rapid increase in the death rate among skilled workers due to the fact that a majority of our highly skilled workers in many of our industries are older men.

Fourth, the reluctance of American youth to choose manual work in certain industries as a means toward a career.

Europe has a much lower standard of living, an overflowing population combined with the possibility of the return of many of her former citizens who are now skilled workers in American industries, a constantly renewing skilled group which gives a fairly steady death rate for skilled workers and a remarkable appreciation upon the part of her youth of the opportunities in the trades.

The foundry industry employs approximately 80 per cent foreign born and 20 per cent native born persons. An investigation of one year's records of labor in more than five hundred foundries leads to the conclusion that the great majority of foundry workers skilled in all round practices of the trade as well as the great majority of foremen and supervisors are found in the upper age group. Naturally there are many skilled workers and foremen in the middle age group and some even in the youngest classification but the great majority are in the oldest group.

The death curve for this industry is seen rising rapidly through the last 25 per cent of the personnel. The average age of the highly skilled group is 55 years while the average age at death is 48. This means that the average age of this group is already seven years beyond the average death age of all white occupied males. No insurance company could be found which would be willing to insure such industries against the loss of skill and supervisory ability.

Immediate Action Necessary

Of one thing we may be certain—if the thousands of employers of different grades of foresight and experience are suddenly faced with a declining labor market, many of them will follow the line of least resistance and begin to bid with one another for help. If this condition of industrial piracy is to be avoided, measures should be taken at once to systematically develop an interest in training upon the part of every employer in America.

If Europe can no longer be depended upon to contribute to our skilled group and if many of the skilled workers today are too old to be depended upon for any length of time, we must naturally turn for assistance to American youth.

The minimum age at which an industry may desire to employ children has a very important bearing on employee training. This is in part because of the emphasis given to the training of children in the continuation and trade school throughout the country. One of the greatest dangers confronting industry in the training of labor is from over-confidence in the present school training agencies. Only those industries capable of using young children can hope for direct benefit from much of the training carried forward in our schools. Naturally there is an indirect benefit which should not be overlooked. This indirect benefit will come from the general improvement of the labor market. It should be borne in mind, however, that children who are completing their trade and continuation school courses and who possess less than the minimum physical and age qualifications required by many industries must find employment in the lighter industries, at least until they are older and stronger. During the interval these children will not practice the trades for which they have been trained and will become familiar with the kind of employment into which they went from school. The chance is good that they will be permanently lost to the trade they studied while in school.

Another school factor which operates against the heavier basic industries is the age at which the majority of children leave the public schools and are available for employment. According to the United States 1920 census there are approximately 4,000,000 children 14 and 15 years of age in America and of this number about 80 per cent are in school. In other words, of all children in America 14 and 15 years of age only about 20 per cent are available for employment. Approximately 43 per cent of all American children 16 and 17 years of age are in school, leaving 57 per cent of the children of these ages who are out of school and available for industry.

The total number of children 14, 15, 16 and 17 years of age out of school is approximately 3,000,000. These take up lighter employments and get started on many of the so-called white collar jobs as clerks or in offices. Statistics from many school systems suggest that the average age at graduation from high school is about 18, which is also the minimum age at which children are available for employment in heavier industries.

The conclusion is that only the lighter industries may expect much help from trade instruction in school and that the heavier industries must either plan to train on the job those children who come to them after several years of work in lighter industries or take high school graduates.

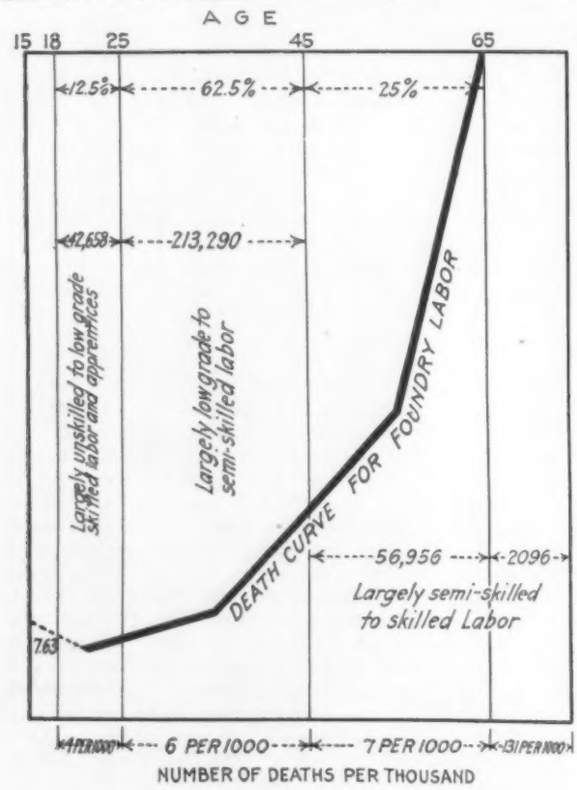
Many employers have experienced great difficulty in getting high school graduates to enter their factories. The reasons for their difficulties are debatable. Some persons are inclined to blame the type of training the children have had while in school and a smaller but growing number believe that many industries have not offered enough opportunity to interest American youth who have high school training or its equivalent.

How Milwaukee Does It

The case of Milwaukee, Wis., is becoming known throughout the country. The manufacturing plants of that city united on a program to interest young men in learning trades. When the movement was begun great difficulty was experienced in getting young men to accept employment in many shops. The managers of these plants went into joint executive session on this

*From the address, "Employee Training," delivered at the annual meeting of the Chamber of Commerce of the United States, Washington, May 20.

question exactly as they would have regarding a shortage of any common basic material. They considered the young men of their district as prospective customers and took account of what they had to sell to them. The first thing they decided was that they, the managers, had not been offering very much except jobs and wages. Those who paid higher wages had not fared very much better than those who paid a lower scale. The type of work seemed to make little difference. It finally was decided to offer a well rounded course of training which would include enough instruction in the subjects closely related to the industrial jobs so that a young man could be fitted for advancement in his chosen occupation. In other words, Milwaukee employers said to Milwaukee youth, "If you will come and work in our factories we will give you opportunity to learn the business—that is, we will give you a real education. If any particular



The Age Divisions of Foundry Employees and the Percentage in Each Age Group. Note that about 12.5 per cent of foundry labor is between 19 and 25, 62.5 per cent is between 25 and 45, while 25 per cent is over 45 years old

factory does not have work of sufficient variety to give you all round experience we will arrange for you to work a while in some other factory whose facilities supplement the one in which you are employed. In addition to giving you opportunity for all round experience we will make it possible for you to study whatever mathematics, drawing or science you need to insure that you may eventually learn the business from the ground up."

These conservative business men were careful about making too many promises. They did not say to these youths, "We propose to train you to become foremen and eventually managers." It was made quite clear to prospective apprentices that the offer included only an opportunity to train their hands and minds and learn a useful trade. Every applicant has understood that advancement depends upon his own response to training, his individual ability and vacancies in the organization.

This the Milwaukee employers did and gradually young men came into their industries. But this was not enough—the employers insisted that the parents or guardians should come. They came and were thoroughly convinced of the soundness of the plan. Only on this condition are young men employed today.

After the applicant is employed he is put on probation for a period of from three to six months during which time each party may withdraw from this agreement. Today many of the factories in Milwaukee have waiting lists of eligible young men who in the meantime are fitting themselves by study at odd times for their chosen trade. Considerable credit is given by Milwaukee employers to the public vocational schools as a means of stimulating interest in industrial jobs and for training in related subjects.

An Ideal System

An indication of the success of Milwaukee's training is seen in the record of one of its largest metal-working plants. Of the last 17 foremen engaged, 15 were former apprentices in this plant. This factory with a production force of 4200 men has gone outside its organization once in ten years for a foreman. It has 339 apprentices and in addition makes a regular practice of upgrading wherever a worker manifests interest.

This type of employee training is considered by some to be the ideal training system. Its particular aim is the training of young men as regularly indentured apprentices in certain well defined trades. The public vocational school in which some of the related instruction is given to apprentices is used also for all day trade and evening classes.

This system is functioning well but there is danger in continually holding up one particular plan of training. Different conditions require different methods. Milwaukee with its great vocational schools, its well developed employers' associations, its State apprentice law and favorable community spirit which to some extent may be said to be an inheritance, cannot be duplicated at once in some other community. Such a system is the result of slow growth and adaptation.

In this connection it must be emphasized that any plan of employee training is finally dependent upon the interest of the supervisory group. There is only one kind of person who can comprehend industrial problems. This is the person who has had or is having industrial experience and who in addition is trained to understand the human factor and the principles of industrial organization.

If there is reason for training youth in the practice of the operations of industry and for giving them instruction in the subjects closely related to these processes, there is certainly more reason for training those employees who are responsible not only for industrial processes but in large measure for industrial relations and for the understanding between the management and workers. This cannot be accomplished merely through training in apprenticeships or through college courses for engineers.

The time to begin the training for foremanship is while the man is learning the occupation and while his mind is plastic. Let us not forget that the age of plasticity differs with individuals—one person may learn more eagerly at fifty than another at twenty-five. This training of foremen must be continued on the job afterward and should be continued throughout their supervisory experience.

Five Definite Suggestions

The following concrete suggestions are offered as a basis for discussion:

1. There should be a national department of training which would function for employers entirely apart from Federal departments but cooperating in specific projects with Federal and other agencies just as cooperation in the campaign for simplification and standardization has been carried on with the Simplified Practice Division of the Department of Commerce and the American Engineering Standards Committee.

The function of this department should be to stimulate interest in employee training upon the part of national industrial organizations and individual plants and to assist, upon request, in the planning of training departments in these organizations and plants.

2. Every manufacturers' group and employers'

group should maintain an employee training committee, the aims of which would be similar to those of the national department.

3. This national department and the committees in these associations should form the nucleus of a National Industrial Training Association whose chief aim would be to promote training on the job beginning with the upgrading process. The secondary aim would be to cooperate with those public and private educational enterprises which could be helpful.

4. Material on the subject of employee training should be prepared and made available to all industrial managers throughout the country. This should set forth the need in constantly revised data on the employee training situation and should include also definite suggestions on various methods of erecting systems of training on the basis of what may already be in existence in each center. These plans should recognize the training needed both for mechanical skill and for supervision.

5. A cooperative arrangement should be made with one or more of the great universities to carry on a comprehensive study of training methods. The results of these researches should be published in sections, the first to deal with methods which are adaptable to the average plant which at the present time must train its workers under average conditions. Later sections should cover specific fields in which the results of research, experiment and experience would be made broadly available.

Details of the Milwaukee Training Plan

Appreciating the growing interest in methods of training labor for the metal-working trades, THE IRON AGE has arranged for the publication of several articles explaining in detail the methods used in vocational training in Milwaukee and other industrial centers. The first article will be presented next week.

Where Steel Exports Went to in April

Canada Took 237,770 Tons of Nine Leading Items in Ten Months—Japan Second with 124,367 Tons

Exports from United States by Countries of Destination

(In Gross Tons)

	Steel Plates				Galvanized Sheets				Black Steel Sheets			
	April		Ten Months Ended April		April		Ten Months Ended April		April		Ten Months Ended April	
	1925	1924	1925	1924	1925	1924	1925	1924	1925	1924	1925	1924
Total Exports...	*11,728*	*10,648*	*66,723*	*83,181*	*12,093*	*5,998*	*125,180*	*78,881*	*7,793*	*5,182*	*91,982*	*153,959*
Canada	9,615	10,101	52,509	64,851	2,886	2,081	15,031	16,463	3,376	4,596	27,841	23,605
Japan	762	....	1,193	911	847	226	8,898	12,626	2,550	471	55,466	108,933
Cuba	26	7	825	519	873	532	9,760	7,767	176	6	677	1,220
Philippine Islands	2	148	850	683	1,455	481	12,448	8,296	....	18	454	353
Mexico	102	24	841	594	786	459	5,885	4,286	....	....	....	....
Argentina	....	....	....	....	853	128	41,802	4,661	178	104	771	1,032
Chile	....	....	....	....	455	156	1,608	1,950	....	....	....	....
Colombia	....	....	....	....	418	163	4,978	2,182	....	....	....	....
Central America	....	....	....	....	479	391	3,843	3,252	....	....	....	....

	Steel Rails				Barbed Wire				Plain and Galvanized Wire			
	April		Ten Months Ended April		April		Ten Months Ended April		April		Ten Months Ended April	
	1925	1924	1925	1924	1925	1924	1925	1924	1925	1924	1925	1924
Total Exports...	*11,693*	*7,789*	*148,313*	*225,402*	*7,073*	*7,426*	*73,194*	*59,556*	*3,016*	*2,591*	*25,057*	*61,253*
Canada	1,020	934	9,673	45,148	112	63	4,418	2,136	918	1,030	8,432	12,274
Japan	1,311	848	5,689	80,147	....	....	....	....	116	74	629	15,902
Cuba	4,763	1,697	41,797	33,098	330	726	954	7,183	442	209	1,735	1,997
Philippine Islands	220	61	3,820	4,101	....	....	....	....	....	....	....	....
Mexico	2,284	661	5,297	6,888	664	282	4,760	2,026	400	390	3,166	2,435
Argentina	....	503	....	1,266	1,206	178	7,125	7,010	11	85	463	6,898
Chile	460	77	4,968	9,298	....	....	....	....	14	12	87	1,449
Colombia	80	695	5,001	3,563	623	486	6,117	3,715	....	....	....	....
Brazil	558	3	6,563	5,677	1,642	3,456	22,178	14,370	115	124	2,295	7,172
Chosen	....	....	....	1,178	....	....	....	....	....	....	....	....
Honduras	103	50	1,817	4,019	....	....	....	....	....	....	....	....
Kwan Tung	....	....	....	12,945	....	....	....	....	....	....	....	....
Australia	....	....	....	....	120	231	2,067	3,399	470	150	5,443	8,624
British S. Africa	....	....	....	....	299	692	5,129	3,928	....	....	....	....

	Tin Plate				Plain Heavy Structural Material				Steel Bars			
	April		Ten Months Ended April		April		Ten Months Ended April		April		Ten Months Ended April	
	1925	1924	1925	1924	1925	1924	1925	1924	1925	1924	1925	1924
Total Exports...	*14,389*	*5,924*	*118,941*	*138,311*	*8,853*	*7,359*	*85,008*	*84,754*	*9,427*	*10,720*	*99,552*	*113,918*
Canada	3,436	1,756	20,595	23,952	4,866	....	62,653	....	5,072	....	26,618	....
Japan	3,918	327	46,851	41,269	278	....	3,906	....	62	....	1,725	....
Cuba	538	154	4,714	4,081	596	....	10,723	....	460	....	8,856	....
Mexico	691	269	3,970	2,641	....	....	....	....	....	....	....	....
Argentina	563	167	7,345	9,756	....	....	....	....	....	....	....	....
Chile	878	28	3,609	2,631	152	....	3,156	....	....	....	....	....
China	1,009	1,554	4,632	22,219	....	....	....	....	....	....	....	....
British India	....	....	....	....	....	....	....	....	....	....	....	....
Hong Kong	701	12	1,259	6,220	....	....	....	....	....	....	....	....
Italy	825	667	....	2,393	....	....	....	....	....	....	....	....
United Kingdom	....	....	....	....	....	....	....	....	1,424	....	13,396	....

European Markets Are Deadly Dull

German and French Interests Confer Again—Poor Franc Exchange Hampers Trade—England Despondent

(By Cablegram)

LONDON, ENGLAND, June 2.

IRON markets are quiet over the holidays but the outlook is not bright, owing to poor general demand. Cleveland pig iron output is being maintained, but there is further restriction on the Northwest Coast, where the Barrow Hematite Steel Co., Ltd., is closing down, except for the hoop mills. This reduces the total number of furnaces operating in Cumberland and North Lancashire to nine. [The Barrow company has eight blast furnaces.]

Finished steel demand is poor and some makers are anticipating relief under the "safeguarding of industries" act, but there is nothing definite yet about this.

Foreign ore is dull. Bilbao Rubio is held nominally at 22s. ($5.35) c.i.f. Tees.

Clyde shipbuilding output in May was 16 vessels aggregating 22,000 tons gross register.

Sheets and Tin Plate

TIN plate is easier, on increased sales by works anxious to keep their mills going and the price, down to 19s. 9d. ($4.80) basis IC, f.o.b., is accepted fairly freely. General demand has improved considerably and fair business is moving, both in domestic and export markets. The Welsh output is up to about 75 per cent of capacity.

Galvanized sheet demand has improved and increased sales have been made, but individual tonnages are not large. Makers generally are adhering to a minimum of £16 10s. (3.58c. per lb.) f.o.b. for No. 24 gage corrugated bundles. Belgian 24-gage corrugated sheets are being sold at £16 (3.47c.) f.o.b.

Black sheets generally are dull. Japan has bought a few small, odd lines, but makers' stocks are still large.

On the Continent of Europe

CONTINENTAL markets are quiet and reports from most quarters are somewhat conflicting. Depreciation in franc exchange is hampering both consumers and sellers. There are moderate inquiries, especially for semi-finished steel, but little business is moving.

In German Upper Silesia only seven furnaces are blowing, out of a total of fifteen.

GERMAN EXPORTS HEAVY

Exporters Reported Selling Below Production Costs

(By Radiogram)

BERLIN, GERMANY, June 1.—The domestic market is quiet. Exports of heavy iron and steel are increasing, owing to the fact that exporters are selling at prices below their production costs. Domestic prices include the following: Steel blooms, 122½ m. ($29.75 per gross ton); steel bars, 135 m. (1.45c. per lb.); thin steel sheets, 190 m. (2.05c.)

The Raw Steel Syndicate has concluded an agreement with the finishing manufacturers to supply the latter with especially cheap material for the production of goods for export. The syndicate has rationed production of its members throughout June to 80 per cent of their full quotas.

[This compares with 85 per cent, which has prevailed for several months.—EDITOR.]

British and Continental European prices per gross ton except where otherwise stated, f.o.b. makers works, with American equivalent figured at $4.86 per £1, as follows:

Durham Coke, del'd..	£1	2½s.				$5.47		
Bilbao Rubio ore†	1	2½				5.47		
Cleveland No. 1 fdy..	4	0				19.44		
Cleveland No. 3 fdy..	3	15				18.22		
Cleveland No. 4 fdy..	3	14				17.98		
Cleveland No. 4 forge	3	13				17.74		
Cleveland basic.....	3	15½				18.35		
East Coast mixed....	4	0	to £4	0½s.		19.44	to	$19.56
East Coast hematite.	4	19	to 5	0		24.06	to	24.30
Ferromanganese	15	10				75.33		
•Ferromanganese	15	5				74.12		
Rails, 60 lb. and up.	8	10	to 9	0		41.31	to	43.74
Billets	6	10	to 7	5		31.59	to	35.23
Sheet and tin plate bars, Welsh	6	12½	to 7	0		32.20	to	34.02
Tin plates, base box.	0	19¾	to 1	0¼		4.80	to	4.92
						C. per Lb.		
Ship plates	8	10	to 9	0		1.84	to	1.95
Boiler plates	12	10	to 13	0		2.71	to	2.82
Tees	8	10	to 9	0		1.84	to	1.95
Channels	7	15	to 8	5		1.68	to	1.79
Beams	7	10	to 8	0		1.63	to	1.74
Round bars, ¾ to 3 in.	9	0	to 9	10		1.95	to	2.06
Galv. sheets, 24 gage.	16	10	to 16	12½		3.58	to	3.61
Black sheets, 24 gage	11	10				2.50		
Black sheets, Japanese specifications	15	5				3.31		
Steel hoops	10	15	and 12	10•		2.33	and	2.71•
Cold rolled steel strip, 20 gage	16	0				3.47		

•Export price.
†Ex-ship, Tees, nominal.

Continental Prices, All F. O. B. Channel Ports

Foundry pig iron: (a)					
Belgium	£3	10s.	to £3	11s.	$17.01 to $17.25
France	3	10	to 3	11	$17.01 to $17.25
Luxemburg	3	10	to 3	11	$17.01 to $17.25
Basic pig iron: (a)					
Belgium	3	10	to 3	11	$17.01 to $17.25
France	3	10	to 3	11	$17.01 to $17.25
Luxemburg	3	10	to 3	11	$17.01 to $17.25
Billets:					
Belgium	5	4	to 5	5	25.28 to 25.52
France	5	4	to 5	5	25.28 to 25.52
Merchant bars:					C. per Lb.
Belgium	5	12½			1.22
Luxemburg	5	12½			1.22
France	5	12½			1.22
Joists (beams):					
Belgium	5	7½	to 5	10	1.17 to 1.19
Luxemburg	5	7½	to 5	10	1.17 to 1.19
France	5	7½	to 5	10	1.17 to 1.19
Angles:					
Belgium	5	18½	to 6	0	1.28 to 1.30
⅛-in plates:					
Belgium	6	16	to 7	0	1.48 to 1.52
Germany	6	16	to 7	0	1.48 to 1.52
¼-in. ship plates:					
Luxemburg	6	16	to 7	0	1.48 to 1.52
Belgium	6	16	to 7	0	1.48 to 1.52

(a) Nominal.

IRON MASTERS CONFER

Conference of French and German Iron Interests Resumed—Tube Trade Organizing

BERLIN, GERMANY, May 16.—Negotiations between French and German industrialists have been restarted at Düsseldorf this week. Both sides seem in earnest to come to an agreement or find, at least, a basis upon which to work to mutual satisfaction. The recent developments in the Franco-German relations in the potash industry have created optimism. If the French ironmasters succeed in establishing syndicates in the iron industry, and they are making strong endeavors to achieve it, it probably will not be difficult to arrive at an understanding between the two countries. Especially the French producers of tubes are reported active in trying to bring about a syndicate in their line; if they succeed, a special syndicate probably will be formed, consisting of the tube manufacturers of both France and Germany.

German iron consumers have been agitating for a long time without success for a decrease in the import tax on raw and semi-finished iron products, to get stronger competition in the home market to keep prices down. With the negotiations between German and French iron producers and with the possibility of the conclusion of an agreement, consumers fear that prices will be kept at their present high level. At the previous negotiations the German ironmasters proposed that the French producers should not sell in the German market, but that the German iron syndicate should take up a certain contingent of French products and sell it in Germany at the current German domestic price. In connection with the import tax levied, this would give the German producers almost a monopoly at home. The regulating influence of the imports of foreign material on home prices would be abolished altogether, and the fears of the consumers are not entirely unfounded in this respect.

Iron prices have advanced lately, and tube prices have been raised by about 3.5 per cent. It is expected that the latter will not go much higher. The flow of orders might be strongly interrupted if prices were advanced without any heed being taken of the position of the consuming industries.

Organizing the German Tube Trade

After the formation of the syndicate of producers of tubes and pipes, negotiations have led to the establishment of a central association of the wholesalers in this line. This organization includes the largest trading firms in the Rhenish-Westphalian, the North and the South-German districts, and it has concluded an agreement with the tube syndicate for a term of seven years. The syndicate increases the works prices by 3 per cent and gives the traders a rebate of 6 per cent. Retail prices, also, are fixed by the syndicate, to safeguard the consumer against excessive prices being charged by traders.

Wholesalers as well as the sales organizations of the works are obliged to adhere strictly to them. Wholesalers not belonging to the organization will be supplied, but will not have the advantages which the syndicate grants to members. The agreement between the wholesalers and the syndicate contains the clause that the latter are, under heavy penalty, not to sell imported material. The competition of foreign material is strong, but it remains doubtful whether this stipulation will exclude imported material from this market.

Steel Works More Avid for Orders

It is difficult to judge the prospects of the iron market in the near future, but there is no sign which would warrant optimism. The works are closely following up every inquiry and again are making strong endeavors to obtain orders. Prices have slightly advanced and show a stiffening tendency. Some of the large works in the Rhenish-Westphalian district, which abstained from taking orders for some time, are giving up their reserve, as there is the possibility to get higher prices now. This shows that they have refused orders not so much for being fully booked, but to await an advance in prices.

Employment at the different works is not at all uniform. While some firms are still booked for some time ahead, others are in need of orders. Consequently the time of delivery has generally decreased, and in some grades it is possible to buy on the term of prompt delivery again. Some large firms are still stipulating 8 to 10 weeks for small bar iron and for structural shapes, but time of delivery for semi-finished material is generally only a few days. Structural shapes are in fair demand on account of better employment in the building industry. The demand in girders is especially strong. Trade in sheets is quiet and the time of delivery is 1 to 3 weeks. Scrap prices are stiffening. Export business is not coming up to expectations lately, except in wires, in which a good trade is done.

The upward tendency of prices is due to the progress made in the establishment of syndicates, as customers fear that prices will go up considerably as soon as these organizations have started work. It is, however, expected that fluctuations in prices will be much smaller as soon as the syndicate questions have been solved, as a certain stabilization will undoubtedly take place then in the prices of iron products.

May Import Turkish Ore

The Upper Silesian iron works are not so well placed in regard to employment as the works in the west of Germany. The demand for pig iron has strongly decreased and English and Czecho-Slovakian producers are cutting prices. The home producers assert that this is, to a certain extent, made possible by the policy of the German railroad, which has not granted the cheap freight rates for the ore supplies of the industry in this district which it was enjoying before the war. The works are negotiating for the supply of Turkish iron ore. It is intended to import 200,000 to 300,000 tons every year and the ore is said to contain 45 to 60 per cent of Fe. The trade in sheets, bar iron and structural shapes is here comparatively quiet and the works are taking only a few orders. There is little demand for wire and other rolled products, and some of the works already have slackened production in some grades.

Machinery and Automobiles

Conditions in the German engineering industry have improved during the last few weeks, which is to a large extent due to foreign credits obtained. Generally manufacturers are fairly well booked, and especially the automobile and electrical industries are well employed, mainly on home orders. The automobile manufacturers are to a large extent installing special American machine tools, to increase output and to lower cost of production, to be able to meet American competition when the free importation of motor cars is again allowed, which probably will not be for a long time. Electrical manufacturers' prices have increased considerably lately. The shipyards have few orders on the books and may soon be forced to dismiss more men.

Exports of engineering products are still far from the pre-war figure. According to official statistics, the total average during the first few months this year amounted to only 58 per cent of the 1913 average. Exports in the different lines vary. Agricultural machines nearly reached the pre-war amounts, while special machinery and parts were about 75 per cent of the 1913 figure. Textile machinery, compressors, fans, printing and paper machinery came up to about 65 per cent of the pre-war average, while machine tools, locomotives and power engine exports are below the average.

The Wisconsin Steel Co., Chicago, has awarded a contract to the United Engineering & Foundry Co., Pittsburgh, for a 40-in. two-high cross-country type of structural mill. The mill will be installed at the company's works at South Chicago, where the construction of a 40-in. blooming mill is now under way with prospects for completion early in the fall. Four 100-ton open-hearth furnaces were built a year ago.

RUSSIAN PURCHASES

Amtorg Trading Corp. Has Spent Millions Here in One Year

Machinery and metal products aggregating in value $10,500,000 have been purchased in this country during the year ended April 30 by the Amtorg Trading Corporation in fulfillment of orders placed by various Russian Soviet industrial and commercial organizations.

The Amtorg Trading Corporation, with offices at 165 Broadway, New York, is acting as the buying and selling agent of the State import and export bureaus of the several Soviet republics as well as of the leading industrial and commercial concerns of the Soviet Union and has handled most of the orders placed by these organizations in the United States.

The Amtorg Trading Corporation was organized in May, 1924, and it was largely owing to its activities that the exportation of metal products from the United States into Soviet Russia on any considerable scale was resumed during the past year. The preliminary data of the first annual report of the Amtorg corporation for the period covering the twelve months ended April 30 show a constant increase in the volume of American purchases of metal products and machinery for the Soviet Union during each succeeding month. A tabulation of the purchases of machinery and metal products divided into periods of four months each shows that the purchases aggregate in value:

During May-August, 1924	$1,386,366.81
September-December, 1924	2,977,876.22
January-April, 1925	6,133,202.86
Total	$10,497,445.89

The highest mark was reached in April, 1925, with purchases totaling $2,192,316.15.

Increases in Various Lines

The progressive increase in the volume of purchases is duplicated in each of the chief items constituting the exports of machinery and metal products from this country into the Soviet Union as shown in the table below.

The extensive purchases of industrial equipment and agricultural machinery and tractors which have been made by the Soviet Union during the past year in European countries and partly in the United States are connected with the work of reconstructing the various industries and of introducing higher and more modern mechanical methods of agriculture which is proceeding in the Soviet Union on a large scale. The demand for modern adequate equipment and agricultural machinery is constantly growing as may be seen also by the numerous inquiries from the Soviet Union received by the Amtorg Trading Corporation, beside actual orders on hand still to be placed and more constantly pouring in.

Large Engineering Staff Employed

Since it started operations the Amtorg Trading Corporation has been confronted with the task of introducing and popularizing American products in Russian markets. A large staff of engineers is constantly at work studying American machinery and industrial equipment and methods of production and at the same time keeping in touch with the organizations and enterprises in the Soviet Union which may be interested in American products. Results attained during the past year appear to show that the Soviet Union offers an increasing market for American machinery and metal products.

It is pointed out by an officer of the Amtorg corporation that the further development of this market may depend to a considerable extent on the readiness of American concerns to meet the competition of the European concerns which have better adapted themselves, through longer contact and closer relations, to the conditions and requirements of the Russian market. Many of the American firms which have been selling machinery and metal products through the Amtorg Trading Corporation have extended credits, for terms varying from three months to two years.

American Shipments to Russia	May-Aug. 1924	Sept.-Dec. 1924	Jan.-April 1925	Total
Agricultural Machinery, Tractors and Parts	$649,110.45	$1,010,452.92	$2,743,835.32	$4,403,398.69
Industrial Equipment, Machinery and Parts	332,047.74	965,852.61	2,919,521.40	3,217,421.75
Oil Well Supplies	258,971.19	436,510.87	569,524.13	1,265,006.19
Automobiles, Motorcycles and Parts	33,978.07	276,823.87	316,219.58	627,021.52
Typewriters, Calculating Machinery and Office Appliances	112,259.36	148,456.60	251,827.18	512,543.14
Miscellaneous Metal Products		139,779.35	332,275.25	472,054.60
Total	$1,386,366.81	$2,977,876.22	$6,133,202.86	$10,497,445.89

Claim Freight Rate Discrimination Against Cincinnati District

Protests by Cincinnati and Middletown iron and steel interests against the proposed reduction of freight rates on iron and steel shipments from the Birmingham district to Memphis and other Mississippi Valley points were made to R. T. Worthington, examiner of the Interstate Commerce Commission, at a special hearing at the Hotel Gibson, Cincinnati, on May 28. Shippers in the Cincinnati district contended that the proposed rate basis is discriminatory against them in selling to southern firms that it is prejudicial to their interests in securing business in southern territory.

One of the factors in the proposed reduction, according to the testimony, was the ability of Pittsburgh steel companies to make shipments by water and rail to Memphis via Louisville on a combination rate of 40.7 cents as against an all-rail rate of 56 cents. It was said that the reduction from the Birmingham district was designed to meet this competition.

Companies in the Cincinnati district had obtained a suspension of the reduced rates from Birmingham. Examiner Worthington will make recommendations to the Interstate Commerce Commission based on the evidence taken at the meeting and the commission will then determine whether the suspension of the proposed tariffs is to stand.

To Relight Thomas Furnace—Idle for Months

CHICAGO, June 2.—The Thomas Furnace Co., Milwaukee, has definitely decided to relight its blast furnace, which has been idle since late in 1923. Blowing in is scheduled for the middle of July, and low phosphorus, malleable, foundry and other grades of pig iron will be made according to the demands of the market. R. W. Coats, formerly superintendent of one of the Toledo Furnace Co. stacks at Toledo, has been appointed general superintendent. Walter Wallingford & Co., McCormick Building, Chicago, will be exclusive sales agent for the output of the furnace.

German Blast Furnace in Brazil

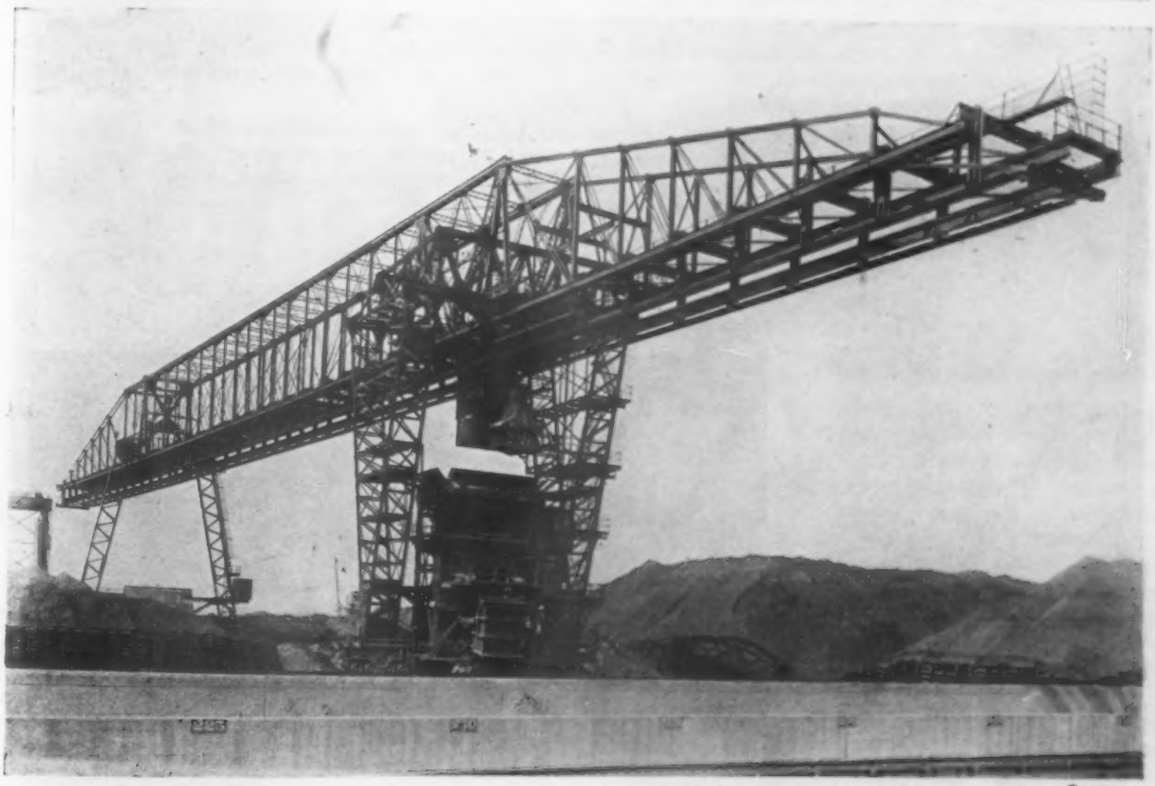
BERLIN, GERMANY, May 16.—The steelworks Hoesch, Deutsch-Luxemburg, Gelsenkirchen, Phoenix and Rheinstahl are erecting a blast furnace plant in Brazil, where they have jointly acquired large ore fields, to make themselves partly independent of Swedish ore supplies. They are obliged to erect the works, as the Brazilian Government has given them permission to export the ore only on the condition that at least 5 per cent of the production is melted down in that country.

ORE BRIDGE IN SERVICE

Patented Tractor Drive a Feature of New Unit at Ashtabula Harbor

THE new ore bridge recently put into service at the New York Central's No. 1 dock at Ashtabula Harbor, Ohio, replacing the one blown down in the storm of last summer, has as an outstanding feature a patented tractor drive for traveling the bridge and holding it in windstorms.

The arrangement of the bridge, which was built by the Brown Hoisting Machinery Co., Cleveland, may be noted from the accompanying illustration. The concrete walls forming the foundations for the bridge structure are 1080 ft. long and are 287 ft. 9 in. apart.



The Bridge Serves a Storage Capacity of Approximately 1,250,000 Tons. It is driven along the dock by two tractors, one in each leg of the bridge, several advantages being claimed for the use of separate tractors

The height from the track rails on the foundations to the top of the trolley track rails is 71 ft. The overall length of the bridge is 632 ft. 5 in., and the trolley travel is 585 ft. 3 in. The ore grab-bucket is of 160 cu. ft. capacity and is rated at 13 tons, although in basic ore the bucket is said to have picked up as much as 22 tons and to average 18 tons in the same ore. Figuring ore at 16 cu. ft. per long ton, the bridge serves a storage capacity of about a million and a quarter tons.

The bridge has 32 truck wheels, 16 under the pier trucks and 16 under the shear-trucks, all of which are idlers. The bridge is driven along the dock by means of two tractors one of which is set into each leg of the bridge, and these travel on the same tracks as the bridge, although not attached to it. These tractors each have eight idler wheels and a large cast-steel driving gear that meshes with a rack extending the entire length of the dock, the racks being located between the pier and shear track rails. The total length of each rack is 1033 ft. 6 in.

The tractors, weighing 90 tons each, are made up of two pairs of trucks and have bodies or rectangular frames connected to the trucks by ball and socket connections. Each tractor is equipped with two independent driving units which are coupled together by means of jaw-clutches. One driving unit per tractor is sufficient to hold or drive the bridge-crane, the second driving unit being installed merely as a precautionary measure. Each driving unit consists of a 100 hp. motor geared to a bull-pinion by means of a worm on the motor shaft and spur gears down to the bull-pinion shaft. The bull-pinions weigh four tons each. Solenoid brakes are used to add to the efficiency of the worm gear holding power.

One of the advantages claimed for the use of separate tractors is quicker delivery, the bridge structure being entirely erected without delays and the tractors installed afterward. Also, the tractors may be built entirely in the shop. Another advantage stressed is that when the bull-pinion driving mechanisms are built right into the bridge, as heretofore, the bull-pinions cannot at all times mesh properly with the racks on the foundation because of the irregularities in the foundations, a condition said to be minimized to a neglible extent on the tractor drive. It is further claimed that when separate tractors are employed for driving, the skewing of the bridge will have no effect on the mesh of the bull-pinion and rack teeth because the tractor is not fastened to the bridge and will at all times retain its normal relation to the rack and foundations.

Lumen Bearing Co. of Buffalo Not Involved in Sale

The sale of the Lumen Bearing Co. of Youngstown, Ohio, to the Falcon Bronze Co., Youngstown, does not change the status of the Lumen Bearing Co. of Buffalo, which is a distinct New York corporation and antedated it many years. The Lumen company in Buffalo was a minority stockholder in the Youngstown Lumen company but had no other connection with its affairs. The Buffalo company will continue to manufacture nonferrous castings, babbitts, solders and ingot metals as in the past.

GOLD TONIC STRENGTHENS CONVALESCENT EUROPE

But Improving Conditions Nullify Advantages She Has Possessed in Regard to Export Trade—Foreign Iron and Steel Dull

(1) *Industrial improvement in Europe, stable currencies, and increased purchasing power in consuming areas are tending to benefit world trade. We are not in so unfavorable a position to share in such trade as some suppose, since European nations are rapidly losing the advantages of low wages and rising exchange rates.*

(2) *Our general exports and imports both decreased in April more than is usual for the month, but were larger than a year ago. Exports exceeded imports.*

(3) *Net exports of gold continue, but at a diminishing rate, with no indication of a serious drain on our gold supply.*

(4) *Imports of iron and steel declined, while exports held level. Exports are not likely to gain much. Lower imports will tend to strengthen the Eastern iron markets.*

(5) *Foreign exchange rates continue to show considerable stabilization on the average. The return of sterling to par means clinching the gold standard and better foreign trade in the long run. The psychological effect is immediately beneficial.*

BY DR. LEWIS H. HANEY
DIRECTOR, NEW YORK UNIVERSITY BUREAU OF BUSINESS RESEARCH

Loans Begin to Show Results

UNQUESTIONABLY the political and economic situation in Europe has shown further improvement. The growing stability of currencies, the large loans made by this country and the higher agricultural prices (which have improved the purchasing power of agricultural sections the world over), have all tended to increase international trade, greater activity in European industry is evident, with the exception of the coal and iron trades.

The entrances and clearances of shipping at French and German ports in the first two months of the year were not only considerably greater than a year ago but were also over the figures for 1913. Entrances at English ports were also greater, but clearances were unfavorably affected by the depressed coal trade.

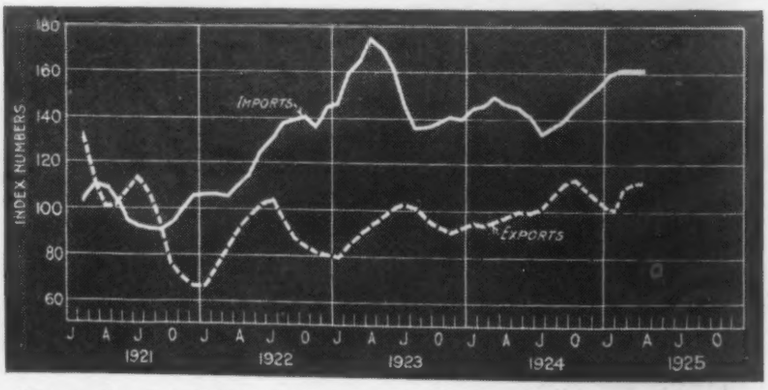


Fig. 1—Imports Show a Tendency to Decline While Exports, Though Lower for April, Still Trend Upward on a Three-Month Average Basis

Naturally, the question arises: Will growing European industry curtail foreign markets for American products? Undoubtedly keen competition in foreign trade is to be expected but, as recently pointed out in a statement issued by the Department of Commerce, there are several factors which will handicap European competitors: (1) High interest rates and shortage of working capital; (2) High taxes; (3) Rising wages, diminishing an advantage which has existed since the war; (4) Higher and more stable exchange rates, removing an advantage which certain foreign countries have enjoyed temporarily in selling abroad.

It is also to be remembered that continual expanding purchasing power in South America and the Orient make it possible for each one of a number of competitors to enjoy trade expansion, i.e., gains by European exporters do not necessarily mean reductions in our foreign trade.

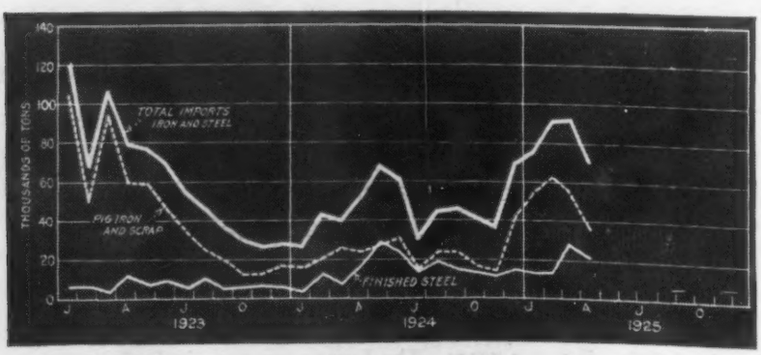


Fig. 2—Total Iron and Steel Imports Continue to Show a Downward Movement

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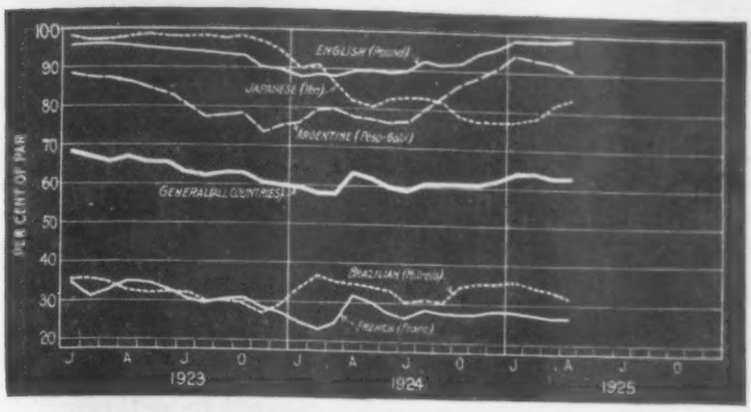

Fig. 4—French and South American Exchanges Show Weakness

Foreign Trade Above Last Year

OUR exports and imports of commodities in April both were larger in value than they were a year ago. Both exports and imports were also a little above the average of the last five years.

Exports decreased in April, falling from $450,000,000 in March to $400,000,000. This decline was in part merely seasonal, but it was somewhat greater than normal. Accordingly, the index number, after adjustment for seasonal variation, declined to 112.6 against 123.7 in March, the average for 1921 being 100. The curves shown in Fig. 1 represent three-month moving averages and the April decline was not sufficient to change the three-month movement of the average.

Imports also declined in April, falling from $385,000,000 in March to $349,000,000. An April decline in imports is usual, but the decrease was a little more than commonly occurs. As a result, the adjusted index fell from 165.9 to 162.9, the average for 1921 being 100. The three-month moving average shown in the graph also declined slightly.

Our exports have been affected by huge shipments of raw materials, chiefly cotton, wheat, copper. In the case of wheat particularly, the large outward movement has been coupled with higher prices. Since Aug. 1 the United States has shipped 56 per cent more cotton to Great Britain than formerly, 44 per cent more to Germany, and 45 per cent more to Japan. This movement can hardly be expected to continue, especially in the case of wheat, which promises to be in small supply in this country during the coming season.

The net balance of our foreign trade in commodities was an excess of exports, which in April amounted to $51,000,000. This is over twice as large as the favorable balance a year ago.

Iron and Steel Imports Decline

IN April the imports of iron and steel fell off rather sharply. As shown in Fig. 2, a similar movement occurred in 1923, but there was an increase in April last year. Imports of finished steel were lower. The decline appears to be due primarily to the dullness in business here, but it suggests that there is little to fear from increased competition with foreign producers in the domestic market.

Our total exports of iron and steel (Fig. 3) held about level in April at a point below the 1923 figure, but higher than in April, 1924. In the last two years, however, total exports of iron and steel increased in April.

There was a very slight decrease in exports of finished steel, but the figure compares favorably with that of a year ago. Exports of pig iron showed a good sized gain, although the quantities involved in this item are small.

In view of conditions in the European iron and steel trade, there is no probability of more than seasonal gains in exports of these commodities for several months to come. On the other hand, the pressure of imports on our market has been reduced, and, as long as prices continue low here, little further trouble from this source is to be expected. Imports, however, may act as a check on advancing prices later on.

Foreign Iron Production Drops

COMPLETE figures are not available for foreign pig iron production in March or April, but the present indications are that there was a gain in March, followed by a decline in April. In the United Kingdom, April production was 569,800 gross tons against 607,900 tons in March. The Bank of Liverpool and Martins writes: "The depressed state of the steel trade has remained unchanged. Continental metal continues to be imported at prices with which British manufacturers can not compete, and further unemployment seems probable." French production of iron increased again in March, and, at 688,900 tons, was higher than in any month last year. The production in Luxemburg, at 198,700 tons, was exceeded only by the output in December. Canada showed a decline in April to 60,100 tons against 63,900 tons in March.

Foreign Exchanges Continue Stable

AS shown in Fig. 4, the general average of foreign exchange rates in terms of dollars has remained practically unchanged at a level slightly under that of

(*Concluded on page* 1688)

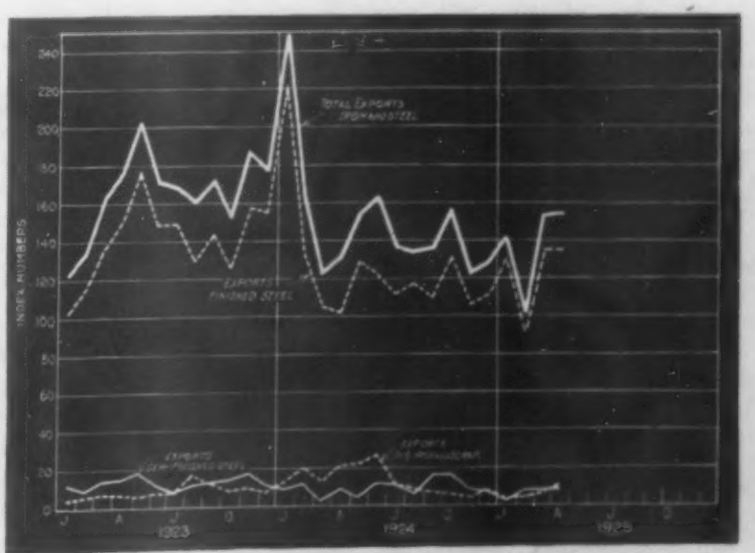

Fig. 3—Exports of Iron and Steel Still Show Good Volume

ESTABLISHED 1855

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Rule of Reason on Trade Associations

THE United States Supreme Court has gone far in fixing the status of trade associations in the decision given at Washington on Monday. The cases were those of the Maple Floor Manufacturers' Association and the Cement Manufacturers' Protective Association. Both had been found guilty in lower courts of violating the Sherman anti-trust act. The Supreme Court, with three dissenting votes, held for the defendant associations, the pith of the decision being in this paragraph:

> We decide only that trade associations or combinations of persons or corporations which openly and fairly gather and disseminate information as to the cost of their product, the volume of production, the actual price which the product has brought in past transactions, stocks of merchandise on hand, approximate cost of transportation from the principal point of shipment to the points of consumption, as did these defendants, and who, as they did, meet and discuss such information and statistics without, however, reaching or attempting to reach any agreement or any concerted action with respect to prices or production or restraining competition, do not thereby engage in unlawful restraint of commerce.

The decision is worth far more than many declarations from incoming Attorneys General, and officers of manufacturers' associations may now give up the practice, that has been fairly common, of seeking to find out what each new head of the Department of Justice intends to do about their activities in collecting and exchanging statistics of sales, prices, production, stocks, transportation costs, etc. Early last year many officers of such associations were announcing in a frightened way that they were abandoning their statistical work, all because an undeposed Attorney General was flying in the face of common sense in characterizing as unlawful association activities in which the Department of Commerce had been heartily cooperating.

In previous comment on the anti-statistics campaign of Attorney General Daugherty THE IRON AGE remarked on the unfortunate fact that the Supreme Court had confined itself to the merits of the particular association cases before it, without laying down general principles. It was also unfortunate that in certain of these cases the associations had done things which probably 90 per cent of the organizations of manufacturers refrained from doing. The decision of this week, however, very definitely lays down general principles, Justice Stone, who gave the majority opinion making this clear statement:

> It is not open to question that the dissemination of pertinent information concerning any trade or business tends to stabilize that trade or business and to produce uniformity of price and trade practice. * * * But the natural effect of the acquisition of wider and more scientific knowledge of business conditions on the minds of the individuals engaged in commerce and its consequent effect in stabilizing production and price can hardly be deemed a restraint of commerce, or, if so, it cannot, we think, be said to be an unreasonable restraint, or in any respect unlawful.

The decision in the hardwood lumber and linseed oil cases had dealt specifically with practices which the vast majority of trade associations have carefully avoided. In the maple floor and cement cases the Supreme Court practically answers the questions on which the Secretary of Commerce sought in vain for a ruling eighteen months ago. And in answering them it gives a substantial guaranty under which trade associations may resume without fear the activities that for many months have been either abandoned or carried on in a week and ineffective way.

The Post-War Price Trend

THERE is a widespread belief that prices are inevitably tending toward the pre-war level; that a mysterious economic gravity is dragging them down. Consequently, on any slight advance there is much ado to the effect that "inflation" is taking place. When prices decline, the word goes around that conditions are settling back to normal and that there is no use struggling against the inevitable.

It is not claimed that prices will ever get back

to a parity with the pre-war basis, nor is there any apparent reason why they should be expected to do so. The well-known changes in economic conditions—greatly increased productive capacity, larger gold reserves, expanding exports and improved scale of living, for example—all work against the reinstatement of pre-war measures of values.

The Harvard Economic Service takes the view that if there is a stabilization of prices the level will be at least 50 per cent above the pre-war. Other responsible estimates have ranged from 20 per cent to as high as 100 per cent above the 1909-13 base, though the latter estimate has been discredited already. So long as the feeling exists that any stabilization of prices is only temporary and that a long-time downward swing is in progress, purchases will be limited, especially when overproduction or decreased consumption casts a shadow upon the immediate future.

Without doubt the tone of business would improve, prices would show more firmness and optimistic forecasts would be more general were the ghost of pre-war prices laid. At the same time it must be admitted that were a robust state of business health prevailing, the influence of a supposititious down trend of prices would be regarded as mainly "psychological," even more so, indeed, than that which President Wilson found in the uneasy weeks of 1913.

Stiffening Canada's Patent Law

THE Canadian Government is working to correct the inconsistencies in the Dominion patent act which became operative early last year and which the Canadian courts later declared invalid because of contradictory provisions. The law was aimed chiefly, it is believed, at the practice in the United States Patent Office which enables inventors to protect their ideas by filing claims and then taking out the patent at their convenience. In this way the life of a patent is prolonged, so to speak, because to the regular period of years of protection is added the interval of waiting. Moreover, secrecy as to the details of an invention may be had by postponing the publication of patent papers, even while protection is being accorded.

The Canadian law as it stood before the new act went into effect, and as it now stands for the time being, permits the filing of application in Canada at any time within two years of the date, not of application in a foreign country, but of the actual granting of the patent. The bill now under way, and whose passage is expected, will be far more rigid than this. It will provide that to secure a patent in Canada the foreign inventor must file application within one year of the time of making application in his home country. The granting of a patent in that country will not count. The period of grace will date from the initial step in the patent office. The American inventor, for example, must not wait a day over the one year, or his rights to protection in Canada will be forfeited. Moreover, the Canadian patent office need wait no longer than six months before granting the patent.

Such a law will reach far beyond Canadian borders, patent attorneys point out. It will have a great influence with those who place value on protecting their inventions in foreign countries, especially in Europe, by hastening the filing of applications in those countries. At the same time, in such cases, the tendency will be to hasten the issuance of patents at Washington, or at any rate to do away with unnecessary delays in taking out patents.

Under the laws of most foreign countries, including those of Europe, application for a patent must be made before a patent on the invention is issued in any other country. Therefore, should a Canadian patent issue on an American invention before application is made in Europe, the inventor's rights to protection in Europe would be gone forever.

Supposing, then, that an American inventor wished to protect his idea in Canada and in Europe: Under the proposed Canadian law he must file his application in the Dominion not later than twelve months following the date of application at Washington and, assuming that he gave himself the full benefit of a year's delay, with the six months added before a patent issues to him, he could be certain of only eighteen months' leeway before he must file in Europe or else forfeit his rights there. The patent laws of European countries are not uniform in their relation to American patents, because most of them are governed by special treaties. But they agree in the one particular as to the previous granting of a patent. Therefore, when the Canadian law is enacted, it promises to set the pace in time required for taking out patents in all foreign countries.

Barriers to Government Service

THE vogue of socialistic preachings has long been a subject of comment. Some of the principles of "scientific socialism" are good in themselves, irrespective of the practical question whether they could be made to "work," and such doctrine has been put forth with the purest of motives. Another emotion, the desire to get something for nothing, has been responsible for much of the vogue of socialistic talk. The two represent diametrically opposite feelings in the human mind. If what has resulted could be unmixed, we should have certain aims in government service that practically all men would be glad to countenance and the rest would go into the discard. As it is, everything to which the label "socialistic" can possibly be applied is anathema to the great majority of men.

There are very useful services that the Government of the United States can perform. A barrier to the proper functioning of the Government in such matters is set up by the great waste of taxpayers' money which other activities of the Government involve, and the annoyance and actual harm which they produce. The Geological Survey does very useful work and does it efficiently and economically. The Department of Commerce as now constituted is run on excellent business principles. Both are good investments of the people's

money, and there are others. Part of the money we pay in taxes is spent in investigating us, with a presupposition that we are guilty and all that is necessary is to unearth the proof. To that men object, and there is a barrier to the proper functioning of government, for the objection by an easy and natural transition extends to all government expenditures. When the Government has an economical fit, all appropriations are likely to be slashed equally.

There are things the Government can do better than individuals, and these it should do. There are others it cannot do so well, or that ought not to be done at all, and these it should leave alone. If it did this, we should pay smaller taxes, and it is conceivable that we then would pay them more cheerfully.

The rush of reformers to Washington arises chiefly from a desire to dominate. The less ability one has the less inclination he has to seek power by his own individual work and the more disposition he has to get the Government to do things which he can feel are done by reason of his activities.

Generations ago the evil effects of alcohol began to be preached, and progress was made, the younger generation being taught. Observing how much progress men have been making in taking care of their health, it was to be expected that this particular form of teaching would succeed more and more year by year. Much of it has gone into the discard, as is shown by the eagerness of the youth to indulge. The Government became a policeman instead of a counselor and friend, and the results tend to discredit other government activities.

We are not getting the good out of our Government that we could get and ought to get on account of various barriers, including those mentioned—the preaching of socialism, the desire to make the Government inquisitorial, and the desire to make it a policeman.

Farm and Metal Trade Prices

SEVERAL references have been made in this department of THE IRON AGE to the fact that comparisons commonly made of prices of farm products and of commodities in general, suggesting that time has not treated the farmer well, are on an insufficient basis, because related to prices in the single year 1913, when farm products chanced to be relatively high priced. The Department of Labor's use of the year 1913 as a basis is simply a convenience. There is no assumption that 1913 was really a standard, normal, average or typical year.

The department has now issued a bulletin, No. 367 in the wholesale price series, which gives more precise and conclusive information. The basis has been changed several times since this statistical work was undertaken a quarter century ago. The first basis took average prices 1890 to 1899 inclusive as 100. The basis used in the past few years was the 1913 average. The report just issued carries the familiar index numbers, for all commodities and for groups of commodities, back to the year 1890, all with 1913 prices as base or 100.

It is made very clear that metals and metal products have advanced a great deal less in price in thirty-five years than have farm products, as the following table will show, giving index numbers at five-year intervals, annual averages except in the case of 1925, for which the month of April alone is represented:

Index Numbers, Commodities at Wholesale
(1913 = 100)

	Farm Products	Metals and Metal Products	All Commodities
1890	70	116	81
1895	61	77	70
1900	70	108	81
1905	79	98	86
1910	103	94	101
1915	104	99	101
1920	218	192	226
1925	153	129	156

The comparison with which every one is familiar is that based on 1913, which in terms of the latest statistics would be that commodities in general have advanced 56 per cent, while farm products have advanced 53 per cent, and only lately got into the neighborhood of commodities in general.

With the facts made public by this latest bulletin one may with perfect propriety make various other comparisons. He may say that either from 1890 or 1900—the coincidence is worth noting—farm products have advanced 118 per cent while commodities at large have advanced only 92 per cent.

When a commodity reaches a good relative price it cannot expect to hold that relation, for each commodity would be clamoring for a certain relation, its previous high record, and there would be a mathematical impossibility. For instance, in 1910 and 1915 farm products were up 48 per cent from 1890 or 1900, while commodities in general were up only 25 per cent. Farm products could not demand that since they had attained that position they would absolutely refuse to budge from it.

The thirty-five-year comparison between farm products and metals and metal products is particularly striking. The one group has advanced 118 per cent (from 70 to 153), the other by only 11 per cent (from 116 to 129). The chief cause of the divergence is that manufacturing methods have been improved more than farming methods. Surely the manufacturers can justly claim a reasonable profit when they have so cheapened their goods to the public.

CORRESPONDENCE

Correct Gating of Malleable Patterns

To the Editor: It often happens that some person entirely outside an industry is in position, by reason of special knowledge, experience, etc., to solve that industry's problems better than the experts within it. No one would suppose ordinarily that civil engineering and malleable foundry work are closely related, but they are, and practically every problem that comes up in a malleable iron foundry can be best solved by the civil engineer.

Take for example the matter of correctly gating

patterns and refer to the article by Mr. Russell, starting on page 1333 of the May 7 issue of THE IRON AGE. Taking into consideration the laws governing the bearing power of compacted molding sand, the shrinkage of iron in cooling, the use to which a casting is to be put and the general rule that, with the same amount of work to make a mold "the greater the tonnage the lower the cost," a civil engineer would change the gate containing eight wrench patterns to an aluminum match plate pattern of the same outside dimensions but containing 22 wrench patterns. Mr. Russell gets only 10 by his change and has a lot of unnecessary sprue to be melted over.

With molders earning from $7 to $10 per day, an aluminum match plate pattern would thus save the foundry approximately $20 per day over the 8-pattern hand mold, and make cleaner work. The saving would be even greater than $20 per day, because from 25 to 50 per cent more molds per day can be made with aluminum matchplates.

But the saving here is only a beginning. The manner in which a casting should be made depends to a large extent upon the use to which the article is to be put. In this instance the casting is a wrench. Now a wrench of the solid type, as this one is, fits just one size of nut, and if that nut is hexagonal or octagonal, the opening between the jaws of the wrench should not of course be less than the diameter of the nut nor more than 1/32 in. greater, for if less the wrench won't "take" the nut, and if more than 1/32 in. greater it will slough off the corners of the nut.

But, with this wrench pattern laid on its flat side, the parting comes inside the jaws of the wrench, which is certain to cause a fin, particularly if there should be a slight shift. This fin must be ground off if the wrench is to leave the foundry as a first-class job, and it would be downright criminal to require any laborer to grind the inside of a wrench. In fact, it is the writer's opinion that this would not be allowed under Ohio industrial law. Therefore, it must be presumed that these wrenches, molded on the flat side, are never anything but a botched up job, the more so as the draft would necessitate the gripping faces of the wrench to be made at an angle with the faces of the nut, instead of parallel, as they should be.

The correct way to handle this job is to mold the wrenches standing on edge, with a space between them not to exceed the diameter of the wrench handle, and core out the jaws, using two long cores running through each pair of jaws for the entire length of the flask. Only one gate running through the center of the plate is necessary, but there should be a feeder for each pair of wrenches, and the gate from the wrench should be as short and as thick as possible. This feeder should be equal in weight, approximately, to one wrench; it should be circular in horizontal cross section and approximately double its diameter in height. The total draft should not exceed 1/16 in. per inch of height of feeder and the bottom of the feeder should be approximately hemispherical in shape, all of which should be below the lower edge of the gate.

This job should be made, like all others, with a jolt-squeeze machine, which could not be done with Mr. Russell's hand pattern and sand match. In no other way could it be made, with the patterns as close as these would be, to get 22 castings per mold, for the sand could not be uniformly compacted by hand and swells and ramoffs would be certain. But, considering the saving in money and perfect castings turned out by the matchplate-jolt-squeeze method, no other method should be used.

In regard to Fig. 5, this casting would be handled by a civil engineer in the same manner as Fig. 3, i.e., gated on edge and thus get four to the mold instead of Mr. Russell's two, saving $7 to $10 per day in molders' wages. More, considering the various advantages of the aluminum matchplate-jolt-squeeze method, which often eliminates, too, the grinding, chipping and hammering incident to the hand pattern method.

While foundry practice does not often require the use of mathematics higher than arithmetic, anything approaching real efficiency will never be attained in foundry work without a knowledge of theoretical and applied mechanics, resistance of materials and kindred subjects, because nearly everything done in a foundry calls for their application, at least, by "rule of thumb."

Handling stresses is the particular field of the civil engineer and when he applies his knowledge to virgin ground, like the malleable iron business, the results are often astounding, although only natural and "all in a day's work" for him. The writer has redesigned patterns many times after the malleable "experts" have finished with them and, in addition to gating up the work to insure the best possible product in the matter of workmanship and material, usually increases the production and lowers costs.

In one instance, a few weeks ago, a malleable iron foundry priced a certain product at 30c. per lb. The patterns had been made by another malleable foundry and were supposed to be the last word. But 30c. made the product too high to meet competition. There were 36 castings per mold and one core to each. After applying simple engineering rules the writer eliminated the cores, regated the patterns so as to get 180 per mold and a daily production that enabled the foundry to set a price of only 8c. per lb.

Any civil engineer could have done the same thing, but the whole procedure was so contrary to "standard foundry practice" that the foundrymen would not believe it could be done until they saw it. Right now the writer is convinced that the foundry could not duplicate that work on another job of the same general plan. Foundrymen cannot seem to grasp the most simple engineering practices, therefore condemn them!

The layman often wonders why patterns play such an important part in foundry production. This is easily answered by the statement that every ounce, pound and ton of material produced by a foundry was first poured into holes that were made by patterns of the desired shape. But it is not easy to answer why, if patterns regulate the price of the product, as they certainly do, they are not made by the best technical skill, or at least under its direction, possible to obtain.

But it is not only in the matter of patterns that technical skill and education are necessary; it is in every department of foundry practice. It happens, however, that pattern equipment plays the most important part, and that is the reason the writer took this occasion to show that the technical man, and particularly the civil engineer, is in position to put this detail of the foundry business on a rational basis, where "guessing" now prevails.

E. O. KEATOR,
Consulting Engineer.
155 North Woodward Avenue, Dayton, Ohio, May 19.

Railroads' Consumption of Steel Last Year

WASHINGTON, June 2.—More than 27 per cent of the total steel production of the United States in 1924 was purchased directly by the railroads or for them through equipment manufacturers, according to a statement issued by the Bureau of Railway Economics. Total expenditures for iron and steel products made direct by the railroads during the year was $365,610,000. This was 21 per cent less than the expenditure for that purpose in 1923. In tonnage, the railroads purchased nearly 21 per cent less than the year before. Total expenditures made by Class I railroads in 1924 for wages, materials and supplies, and for improvements, were $4,847,700,000.

Freight cars placed in service during the first four months of the present year totaled 57,926, according to reports filed by Class I railroads with the Car Service Division of the American Railway Association. This was an increase of 11,505 over the number placed in service during the corresponding period last year. Class I railroads during the first four months this year also installed in service 601 locomotives, of which number 171 were placed in service during April. Locomotives installed during the first four months last year numbered 758.

DISCUSS APPRENTICESHIP

National Program of Training Advocated—Milwaukee Plan Working Well

The need of a national program of apprenticeship in all trades and some professions was strongly urged by Harold S. Falk, vice-president of the Falk Corporation, Milwaukee, in a paper on "A National Apprenticeship Program," read at the apprenticeship session of the spring meeting of the American Society of Mechanical Engineers held at the Hotel Pfister, Milwaukee, May 18 to 21.

Until a few years ago a considerable portion of the skilled jobs were filled with Europeans trained for the work, said Mr. Falk, but now we are faced with the necessity of filling them with American trained youths. This, it was stated, has made it necessary that we again consider the efficacy of the old method of training on the job, that is, apprenticeship. In discussing whether this method can be made effective under modern conditions apprenticeship as it existed 25 years ago was reviewed. There was the small establishment in which the employer was the instructor of the apprentices, in whom he took just pride. The essentials of this rather successful training scheme were given as, first, a "tradition" for the training of mechanics; second, all the essentials of a complete trade or trades wrapped up in the manufacturing operations however small their scale; and third, the essentials of an adequate instructional program. The "old man" was interested in the perpetuation of his enterprise and made the instruction of his boys the major part of his own task. Thus instruction was necessarily effective, direct, personal and comprehensive.

Two elements, specialization of operations and division of labor, which have entered into present industrial life, were said to have changed the whole problem of industrial education. These elements, it was pointed out, have broken down our major trades and professions to such an extent that but few manufacturing establishments are able to present complete and adequate programs for the training of the skilled personnel necessary to vitalize our industrial life. But few of the larger industrial establishments can provide adequate training programs, and these cannot train a skilled personnel sufficient for their entire community. The smaller plants, whose operations comprise but a portion of the trades they represent, are unable to interest young men in a formal apprenticeship because they cannot present an adequate training program.

The lack of tradition and of material for adequate programs of industrial education were said to have operated powerfully to destroy the possibility of making apprenticeship effective in modern industry. There are exceptions, said Mr. Falk, but there is not an industrial community in America today that is self-supporting or solvent in its personnel phase and the vitality of our industrial life must be judged by the solvency, in this respect, of our individual communities and not by a few individual plants. All establishments, it was held, must unite to supply the necessary training. There must be a grouping of smaller plants along trade lines so that the groups can present adequate programs of industrial education. This must be a community affair in which all elements do their share.

Proper vocational education of the related type that must accompany true apprenticeship must, it was said, also be established on a community basis. All elements should give proper support to a centrally located institution which can provide the means of adding the related classroom instruction essential in a formal apprenticeship.

Milwaukee Has Cooperative Apprentice Plan

Reference was made to the experiment of this kind in which Milwaukee is at present engaged. The metal-trades industries have united on a community basis, and cooperatively are making that community independent in its supply of skilled mechanics. Groups were formed in which smaller organizations were arranged about the larger in such a manner that the groups were able to present a complete and adequate program of training. Apprentices are exchanged between smaller and larger plants according to a prearranged plan. A district director has been engaged to coordinate the activities of the various groups and an effective promotional program has been made part of the annual activities. Inspirational gatherings of apprentices, parents and employers have been held, and at the last annual dinner entertainment more than 1000 metal trade apprentices and employers were present.

This community program includes close relationship to the public school system, particularly the local vocational school, which has become the hub of the whole training scheme. Apprentices attend the vocational school full time during their probationary period and part time during their apprenticeship. The full-time classes were said to have given material prestige to apprenticeship among young prospectives, and the part-time school was stressed as having become a necessary instrument in the promulgation of the plan. Without it the smaller plants would be unable to give related trade training and the larger plants would have the whole community program on their hands.

A Community Problem

Milwaukee, said Mr. Falk, has ceased to talk apprenticeship in terms of the individual plant; it considers the problem only from the community standpoint. It was held, however, that if Milwaukee's plan is to enjoy permanent success, every American industrial community must carry on a similar community apprenticeship. In other words, a national program is essential. In no other way, said Mr. Falk, can we as a nation sustain our industrial supremacy and in no other way can we be fair and just to each young generation as it passes out into the world of work and accomplishment. We need a national organization and a national plan to inaugurate a promotional program such as will place apprenticeship in its proper place in our economic order.

Other speakers at the apprenticeship session included R. L. Cooley, director of vocational education, Milwaukee, whose address was on "The Place of Vocational Schools in the District Apprenticeship Plan." F. W. Thomas, supervisor of apprentices of the Atchison, Topeka & Santa Fe Railroad Co., Topeka, Kan., spoke on "The Place of Railroad Apprenticeships in a National Apprenticeship Plan." Forms used in apprenticeship administration, apprentice control charts and other material were exhibited and explained by H. A. Frommelt, apprentice superintendent, Falk Corporation, and J. J. Metz, district supervisor of apprentices, Milwaukee, was present for consultation as to the working of the Milwaukee plan. The Milwaukee vocational school was open for inspection throughout the convention.

Quad-City Foundrymen Elect Officers

The Quad-City Foundrymen's Association elected officers for the coming year at a regular monthly meeting held at the Davenport Chamber of Commerce, Davenport, Iowa, May 25. They are as follows: President, P. T. Bancroft, John Deere Harvester Works, East Moline, Ill.; vice-president, J. H. Diedrich, Blackhawk Foundry & Machine Co., Davenport, Iowa; secretary-treasurer, D. H. Ward, Union Malleable Iron Co., East Moline, Ill.; directors, A. K. Reading, Zimmerman Steel Co.; John H. Ploehn, French & Hecht; Roy Schofer, Rock Island Plow Co.; A. E. Hageboeck, Frank Foundries Corporation; C. Howard Ross, Union Malleable Iron Co.

The program of the meeting was devoted to a discussion of malleable iron. The chemistry of malleable iron was the subject of remarks by R. Hinde, Tri-City Malleable Castings Co., East Moline. The melting and annealing of malleable castings was discussed by C. Howard Ross. To make the subject more interesting, wooden models of annealing and melting furnaces were exhibited and a very lively discussion ensued with reference to types of fuel economies and variations in analysis under different conditions.

MACHINERY EXPORTS

April Holds March Increase Over February—26 Per Cent Over April, 1924

WASHINGTON, June 1.—Exports of machinery in April were valued at $36,033,980, a slight gain over exports for March, when they were valued at $35,962,076. For the ten months ended with April, exports of machinery were valued at $277,812,533, as against $261,006,001 for the corresponding period one year ago.

Exports of harvesters and binders to France in April were valued at $260,786, while for the ten months shipments of this equipment to that country were valued at $1,415,070. Harvesters and binders sent to Denmark in April amounted to $228,473, in the ten months, to $456,906. Argentina took harvesters and binders to the value of $33,000 in April and of $889,038 during the ten months.

Exports of locomotives by number and value in April and for the ten months ended with April, to the more important countries of shipment, were as follows: Philippine Islands, 6, $195,844; 57, $1,129,228; Brazil, 3, $67,000; 59, $1,276,258; Canada, 4, $32,868; 28, $227,554; Mexico, 2, $18,000; 59, $1,762,537.

The United Kingdom was the principal destination of sewing machines from a point of value in April, taking 3571 valued at $180,993, while for the ten months ended with April, the United Kingdom took 24,657 valued at $1,445,295. Sewing machines exported to Mexico in April numbered 4461, with a value of $125,777, while for the ten months Mexico took 42,272 valued at $1,087,906. Sewing machines shipped to Cuba in April numbered 4732, with a value of $120,833, while for the ten months shipments to that country were 24,662, valued at $604,966.

Machinery Exports from the United States

(By Value)

	April, 1925	April, 1924	Ten Months Ended April, 1925	Ten Months Ended April, 1924
Locomotives	$352,577	$181,484	$5,897,583	$3,363,596
Other Steam Engines	47,700	109,974	1,465,015	955,884
Boilers	270,657	152,960	1,689,852	1,379,519
Accessories and Parts	208,784	137,204	1,601,923	1,481,121
Automobile Engines	2,354,036	268,273	8,505,670	3,599,403
Other Internal Combustion Engines	685,391	780,862	5,806,422	5,651,711
Accessories and Parts for	317,895	355,184	2,796,974	3,082,808
Electric Locomotives	24,478	274,247	1,383,568	1,671,961
Other Electric Machinery and Apparatus	597,048	763,628	6,048,790	7,703,653
Excavating Machinery	144,380	121,188	1,783,552	1,429,910
Concrete Mixers	47,975	68,243	554,795	490,916
Road Making Machinery	166,197	136,686	999,534	875,113
Elevators and Elevator Machinery	214,744	311,735	1,646,099	3,686,166
Mining and Quarrying Machinery	734,635	945,779	8,114,737	9,264,039
Oil Well Machinery	1,053,617	701,906	6,251,008	5,912,077
Pumps	658,915	578,727	5,768,273	6,428,239
Lathes	203,730	86,850	1,392,083	1,076,708
Boring and Drilling Machines	89,784	28,866	619,104	583,452
Planers, Shapers and Slotters	33,215	14,438	406,658	220,857
Bending and Power Presses	45,162	22,471	664,804	362,006
Gear Cutters	70,017	43,695	497,778	317,861
Milling Machines	124,901	30,524	947,122	360,936
Thread Cutting and Screw Machines	140,241	32,570	595,753	545,301
Punching and Shearing Machines	18,009	9,753	125,358	119,055
Power Hammers	15,402	10,963	204,960	148,093
Sharpening and Grinding Machines	377,953	111,790	2,017,754	442,968
Other Metal Working Machinery and Parts of	477,719	382,698	3,769,612	3,741,770
Textile Machinery	925,152	835,728	8,041,072	7,045,276
Sewing Machines	940,062	687,870	6,521,805	8,517,993
Shoe Machinery	139,258	133,806	1,303,728	1,041,505
Flour-Mill and Gristmill Machinery	57,600	57,163	628,319	963,870
Sugar-mill Machinery	378,784	132,310	8,055,006	6,001,528
Paper and Pulp Mill Machinery	108,655	147,099	1,350,232	1,627,508
Sawmill Machinery	78,527	53,539	664,525	523,953
Other Woodworking Machinery	164,977	120,574	1,121,812	1,079,084
Refrigerating and Ice Making Machinery	245,961	180,026	1,689,437	941,035
Air Compressors	332,961	268,516	2,661,732	2,460,476
Typewriters	1,689,928	1,431,650	13,717,392	12,001,416
Power Laundry Machinery	144,259	96,365	837,649	795,586
Typesetting Machines	293,586	319,907	2,891,256	3,384,286
Printing Presses	355,851	315,382	4,355,331	4,000,913
Agricultural Machinery and Implements	7,960,824	6,741,647	51,342,062	49,212,568
All Other Machinery and Parts	12,742,444	10,354,323	101,076,314	96,253,771
Total	$36,033,980	$28,547,804	$277,812,533	$261,006,001

Typewriters were shipped to the United Kingdom in April, to the number of 6264, with a value of $369,457, while for the ten months the number was 50,235, valued at $2,621,758. France ranked second, taking 2036 typewriters in April, the value being $126,570, and for the ten months, 25,795, with a value of $1,509,498. Exports of typewriters to Germany in April numbered 1344, with a value of $92,219, and for the ten months the total was 11,142, with a value of $643,955. The United Kingdom also was the leading buyer of printing presses in April, taking 42, valued at $98,804.

Italy was the principal source of exports of lathes in April, taking 15, valued at $38,429, while Ecuador took 8, valued at $34,474; the United Kingdom took 19, valued at $27,380, and Russia in Europe took 6, valued at $15,539. The total number of machine tools exported in April was 4775, valued at $1,245,634, compared with 5295, valued at $1,364,930, exported in March.

Imports of machinery in April were valued at $1,167,099, as against a value of $999,237 in March.

Imports of Machinery into the United States

(By Value)

	April 1925	April 1924	Ten Months Ended April 1925	Ten Months Ended April 1924
Metal-working machine tools	$42,659	$34,909	$248,103	$328,910
Agricultural machinery and implements	523,280	286,006	2,365,542	2,036,417
Electrical machinery and apparatus	63,282	26,118	1,306,247	342,008
Other power generating machinery	2,651	1,758	22,037	482,084
Other machinery	363,540	141,296	3,340,022	1,412,193
Vehicles except agricultural	170,687	294,586	1,333,000	2,073,487
Total	$1,167,099	$794,673	$8,624,951	$6,675,099

United States Metal-Working Machinery Exports

	April, 1925 Quantity	April, 1925 Value	March, 1925 Quantity	March, 1925 Value
Lathes	127	$203,730	199	$261,593
Boring and drilling machines	121	89,784	61	60,582
Planers, shapers and slotters	26	33,215	39	76,773
Bending and power presses	23	45,162	51	74,412
Gear cutters	116	70,017	48	84,196
Milling machines	64	124,901	131	227,121
Thread-cutting and screw machines	96	140,241	70	89,007
Punching and shearing machines	24	18,009	19	20,420
Power hammers	18	15,402	17	23,963
Sharpening and grinding machines (external and internal only)	232	377,953	200	312,495
Chucks, centering, lathe, drill and other metal-working tools	2,598	39,210	3,221	36,509
Pneumatic portable tools	1,330	88,010	1,339	97,859
Total	4,775	$1,245,634	5,295	$1,364,930

The McKinney Steel Co., Cleveland, will move its general offices May 28 to its new five-story office building at its River steel plant, the building being located at Champa Avenue and East Forty-fifth Street. The offices of the company since its organization have been in the Perry-Payne Building.

The Dominion Alloy Steel Corporation, Sarnia, Ont., turned out the first of its galvanized sheets on May 26 in the presence of W. E. Boyd, president of the company; W. H. Kenney, director; E. G. Jones, superintendent, and a large number of other company and town officials.

The Crane Co., Chicago, on May 15, started a week's celebration of its seventieth anniversary with a dinner at the Congress Hotel, Chicago, to 146 branch managers and 655 employees and former employees who had served with the company from 25 to 55 years.

PIG IRON FIRMS MERGE

Rogers, Brown & Co. and Crocker Brothers to Be Consolidated as a Corporation

Rogers, Brown & Co. and Crocker Brothers, two of the best known firms in the distribution of pig iron, coke, ore and ferroalloys, announce that, effective July 2, they will form a corporation under the name of Rogers, Brown & Crocker Brothers, Inc. The partners of the two firms become stockholders in the corporation and the active management will be unchanged.

D. Fairfax Bush, one of the senior partners of Crocker Brothers, becomes chairman of the board of directors of the new corporation and Arthur A. Fowler, resident partner in New York of Rogers, Brown & Co., will be president. The main office will be in New York, but whether at the present address of Rogers, Brown & Co. or that of Crocker Brothers has not been determined.

Following closely upon the absorption of Read, Fears & Miller by Crocker Brothers and the taking over of Naylor & Co. by Rogers, Brown & Co., the present consolidation is a further recognition of the necessity of meeting the new conditions which have arisen in the merchandising of pig iron and allied products. One company will now handle the business formerly handled by four firms.

Present partners in Rogers, Brown & Co. are W. A. Rogers and W. S. Rogers, Buffalo; D. B. Meacham, S. Meacham and J. K. Pollock, Cincinnati; W. T. Shepard, Buffalo; A A. Fowler and O. Fowler, New York. Offices are maintained in Cincinnati, Buffalo, New York, Chicago, Boston, Cleveland, Pittsburgh, Philadelphia and St. Louis. In four of these cities, New York, Boston, Cincinnati and Philadelphia, Crocker Brothers have offices, which will be consolidated with those of Rogers, Brown & Co. An announcement of the personnel of the district offices will be made later.

The partners in Crocker Brothers are D. Fairfax Bush, George A. Crocker, J. Bentley Cueman, Charles B. Newcomb, L. H. Atkinson, Charles A. Reed and Louis H. Miller. Mr. Reed and Mr. Miller became partners upon the acquisition of the business of Read, Fears & Miller by Crocker Brothers, an announcement of which appeared in THE IRON AGE of April 16, 1925, p. 1165.

Crocker Brothers have a longer record in the pig iron business than Rogers, Brown & Co., but have not extended their business quite so far geographically. The firm of Crocker Brothers was established in 1854 by George A. Crocker, who died in 1906. His brother, William A. Crocker, who for a time was connected with the business, died in 1886. A present member of the firm, George A. Crocker, is a son of the founder.

The business long carried on by Rogers, Brown & Co. was established at Cincinnati in 1880 under the name of Rogers & Trivett. Mr. Trivett died three months later and was succeeded as a partner by Archer Brown, a Cincinnati newspaper man. Mr. Brown died in 1904. The expansion of Rogers, Brown & Co. has kept step with the great growth of the iron and steel industry, their offices in nine cities being an evidence of their widespread activities.

P. B. Yates Machine Co. Under Control of Executive Employees

The P. B. Yates Machine Co., Beloit, Wis., one of the largest manufacturers of woodworking machinery in this country, has passed into the ownership and control of a group of executive employees, who acquired the holdings of Florence Argall Yates, aged 17, sole survivor of the late P. B. Yates, founder of the concern, who died a year ago. The consideration is approximately $7,000,000. P. G. Farrow of Beloit, formerly assistant president, since whose death he has been general manager, is now the majority stockholder with William H. Payne, manager of the Portland, Ore., branch; E. L. Hart is manager of the Chicago branch; B. F. Bader, manager San Francisco Branch, and George W. Robinson, manager of the Yates branch works at Hamilton, Ont. Other employees also have become interested. A new corporation is in process of organization but it is stated that there will be no change in policies or personnel. The Yates company was founded in 1885 as the Berlin Machine Works at Berlin, Wis., but moved to Beloit shortly after. A branch factory was established in Canada in 1900.

Associated Machine Tool Dealers

A meeting of the Associated Machine Tool Dealers, an organization that was formed recently at a meeting in Cincinnati, was held May 25 and 26 at the Roycroft Inn, East Aurora, N. Y., and was attended by executives of sixteen leading machine tool dealers. G. E. Merryweather, Motch & Merryweather Machinery Co., presided.

A constitution, which was submitted in rough form at the Cincinnati meeting, was adopted with various modifications of the original draft. Methods of cooperating with machine tool manufacturers and other subjects of interest to the distributors of machine tools were discussed. A manufacturers' relations committee was appointed to cooperate with a similar committee that had already been appointed by the National Machine Tool Builders' Association. This joint committee will take up some of the problems that develop in the relationship between the machine tool manufacturers and dealers.

J. R. Porter, Marshall & Huschart Machinery Co., Chicago, Ill., was named as chairman of the dealers' committee. Other members are J. R. Vandyck, Vandyck-Churchill Co., New York; J. W. Wright, Colcord-Wright Machinery & Supply Co., St. Louis; George H. Cherrington, Brown & Zortman Machinery Co., Pittsburgh, and Charles T. Bush, Charles A. Strelinger Co., Detroit.

A committee on ethics was appointed with W. J. Radcliffe, E. A. Kinsey Co., Cincinnati, as chairman. Other members are E. H. Wachs, Stocker-Rumely-Wachs Co., Chicago; E. P. Essley, E. L. Essley Machinery Co., Chicago, and C. C. Wright, Cleveland Tool & Machine Co., Cleveland.

The officers of the organization are: President, G. E. Merryweather; vice-president, Marshall Prentiss, Henry Prentiss & Co., New York; treasurer, George H. Cherrington; secretary, Tyler W. Carlisle, Strong, Carlisle & Hammond Co., Cleveland.

New Paint

A paint that will adhere to creosoted wood and known as Kreolite Insulated Koating is a new product of the Jennison-Wright Co., Toledo, Ohio. It is stated that this paint can be applied and will maintain its color over wood, metal or concrete surfaces previously painted with tar or asphaltic paints, over hardened pitch or asphalt or over mastics made from ether and over wood treated with tar products. Its use, it is pointed out, will allow the use of creosoted woods in many fields, particularly where a black surface is not desirable as in walls, ceilings or roofs of creosoted wood and on tar painted structures of wood and metal.

It is believed that this coating will broaden the field for creosoted wood for various purposes where the use of wood so treated has been prohibitive because a light colored paint could not be applied with satisfactory results. Among uses for which a demand is expected is for marking zone limits and aisles of wood block or asphalt floors in factories and for painting signs on creosoted sign boards and on the sides and roofs of buildings that have been coated with tar or asphaltic paints. The paint is now being made in four colors, aluminum, orange, yellow and black.

DISPOSAL OF OLD SHIPS

Shipping Board Seeks Sale of Some for Operation and Others for Scrap

WASHINGTON, June 1.—Entering upon the program of disposing of its obsolete vessels, the Shipping Board will advertise at once for bids for 200 designated ships, which will be sold for scrap. These vessels, with a total of 817,130 deadweight tons, include the following classes:

66 of 3,525 d.w.t. each
1 of 4,155 d.w.t.
16 of 3,270 to 3,320 d.w.t. each
4 of Lake Type 3,268 to 3,295 d.w.t. each
4 of Lake Type 3,510 d.w.t. each
6 of Lake Type 3,364 d.w.t. each
2 of Lake Type 3,325 d.w.t. each
51 of Lake Type 4,165 d.w.t. each
*50 of 5,070 to 5,340 d.w.t. each

*Oil burners; the others are all coal burners.

It is estimated that these vessels represent approximately 272,000 tons of steel scrap. The presumption is that Henry Ford, with whom Chairman F. V. O'Connor of the Shipping Board recently conferred concerning the sale of 400 ships, will submit bids for this first group of vessels to be sold for scrap. The board also is hoping that scrap dealers will show an interest in the sale although, in view of conditions in the trade, some doubt has been expressed as to whether many bids will be submitted. It is felt also that the price offered will be rather low. Past experiences with breaking up ships for scrap likewise is recalled by those who do not look for either many bids or high figures.

This question, however, apparently is of secondary importance to the Shipping Board, whose first thought is to dispose both of the old ships for scrap and of the better ships for private operation. In this connection, Chairman O'Connor said:

> Now that this scrapping of useless ships is definitely under way, we shall turn our attention to useful active ships, and make every possible effort to get bids for them from private American citizens who will make the ships more useful. The Dieselizing of a ship is expensive, but it spells economy. If private operators make bids for American ships and guarantee to Dieselize them and to operate them under the American flag for a period of years, they should receive favorable consideration as to price and terms of payment. We have talked for some time about getting a privately-owned American Merchant Marine. To do this, the board will bend every effort.

Record Steel Output of Tennessee Company

BIRMINGHAM, June 2.—Ensley Steel Mills in May broke a record, producing 112,535 tons ingots against 110,200, the previous monthly record. All four new open hearth furnaces at Fairfield are now in operation. The new sheet mill of the Tennessee Coal, Iron & Railroad Co. will be completed in the latter part of August.

Judge Gary, chairman Steel Corporation board, together with President Crawford and Vice-President Ryding of Tennessee company, made a trip in a caboose attached to a long string of loaded ore cars from the top of Red Mountain to the Ensley mills yesterday, the first hauling of ore on the 5-mile elevated railroad of the Tennessee company.

Sustained Operations in Mahoning Valley

YOUNGSTOWN, June 2.—While there are deviations this week in operating schedules of individual properties in the Mahoning Valley, the general average is being sustained. Moderate losses in production by the Republic Iron & Steel Co. are offset by gains by the Youngstown Sheet & Tube Co. The A. M. Byers Co., Pittsburgh, has advanced schedules in a moderate way at its Girard works.

One more open-hearth furnace is operating this week than last, making a total of 36 out of 52 independent units. Average steel ingot production, however, shows a slight loss, as the Bessemer department of the Republic company has been reduced to a single-turn schedule.

Of 127 sheet and jobbing mills in the Valley, 95 were scheduled to run, representing the high mark of recent weeks, and a gain of seven mills over the preceding week.

Of 18 tube mills, schedules represent an average of 12½ active units.

The Republic company is operating its plate mill single turn and four bar mills. Schedules of the Byers company show 46 puddling furnaces fired and one bar mill under power. The Carnegie Steel Co. is operating its properties in the Youngstown district at an average rate of 75 per cent. Rolling mills of the Trumbull Steel Co. are averaging 75 per cent.

The rod mill of the Sheet & Tube company is operating only part-time, but wire and conduit production continues through the week.

Schedules of non-integrated sheet producers show little or no change. The Newton Steel Co. has 16 mills under power; the Falcon, Mahoning Valley and Thomas Sheet Steel companies eight each, and the Waddell Steel Co. five mills.

To Present British Foundry Exchange Paper at Syracuse Meeting

J. E. Fletcher, consultant of the British Cast Iron Research Association, has been delegated by the Institute of British Foundrymen to present the annual exchange paper before the Syracuse meeting of the American Foundrymen's Association. Mr. Fletcher, who is one of the foremost British authorities, has selected as his subject "Some Inter-Relationships in Cast Iron, Wrought Iron and Steel Practice." He has had a lifelong connection with the foundry industry. At the Norfolk Works of Thomas Firth & Son, Ltd., he was steel foundry manager and associated with the development of the open-hearth and forging departments. He later became foundry manager in the works of Cammell, Laird & Co., Ltd., and finally had charge of the iron and steel foundries, melting shops, forges, tire and spring works there.

J. E. FLETCHER

He had a long experience in ferrous alloys research, especially in connection with chilled castings in iron and steel, and was repeatedly in France and Germany during the development of the Harmet fluid compression of steel, and of the Krupp armor treatment processes. He had early experience in the heat treatment of both cast iron and steel and in the determination of the electrical and magnetic properties of steel and iron, having been associated with Dr. Hopkinson in some of the earliest researches carried out in steel works on magnetic permeability and hysteresis.

Lower Southern Freight Rates to Ohio River

CINCINNATI, June 1.—Reduction in freight rates from furnaces in the Birmingham district to Ohio River points will be made on July 6, according to word received here today. The new rates are as follows: Birmingham to Cincinnati, $3.69; Birmingham to Louisville, $3.39; Birmingham to St. Louis, $4.42. It is rumored that southern Ohio furnaces are to register a protest against the new schedule.

MAY IRON OUTPUT

Net Loss of 24 Furnaces—28 Shut Down and 4 Blown In

Daily Rate 14,090 Tons Less Than April, a Decrease of 13 Per Cent

May blast furnace operations accentuated still further the decline which was quite sharp in April. The May output at 94,542 tons per day was 14,090 tons less than the April rate—a decline of about 13 per cent. There was a net loss of 24 furnaces as compared with 25 in April and 9 in March.

The production of coke pig iron for the 31 days in May amounted to 2,930,807 gross tons of 94,542 tons per day as compared with 3,258,958 tons or 108,632 tons per day for the 30 days in April. The May record is the lowest for the year.

There were 28 furnaces blown out or banked during May and 4 blown in, a net loss of 24, bringing the number of furnaces active on June 1 to 196. The estimated daily capacity of these 196 stacks on June 1 is about 89,500 tons compared with 100,800 tons per day for the 220 furnaces active on May 1.

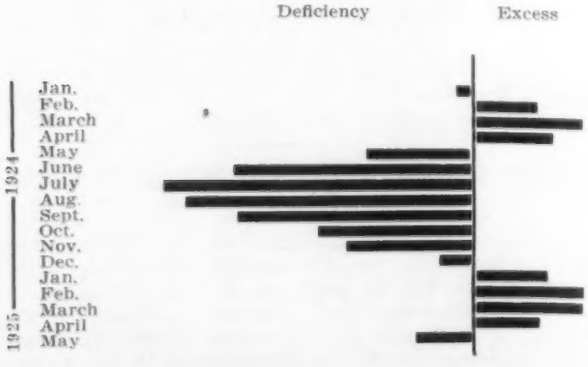
Of the 28 furnaces shut down last month 10 were Steel Corporation stacks, 11 were independent steel company furnaces and 7 were merchant units. Of the furnaces blown in three were independent steel company stacks and one was a merchant furnace.

Daily Average Production of Coke and Anthracite Pig Iron in the United States by Months Since Jan. 1, 1919—Gross Tons

	1919	1920	1921	1922	1923	1924	1925
Jan.	106,525	97,264	77,945	53,063	104,181	97,384	108,720
Feb.	105,006	102,720	69,187	58,214	106,935	106,026	114,791
Mar.	99,685	108,900	51,468	65,675	113,673	111,809	114,975
Apr.	82,607	91,327	39,768	69,070	118,324	107,781	108,632
May	68,002	96,312	39,394	74,409	124,764	84,358	94,542
June	70,495	101,451	35,494	78,701	122,548	67,541	.....
July	78,340	98,931	27,889	77,592	118,656	57,577	.....
Aug.	88,496	101,529	30,780	58,586	111,274	60,875	.....
Sept.	82,932	104,310	32,850	67,791	104,184	68,442	.....
Oct.	60,115	106,212	40,215	85,092	101,586	79,907	.....
Nov.	79,745	97,830	47,183	94,990	96,476	83,656	.....
Dec.	84,944	87,222	53,196	99,577	94,225	95,539	.....
Year	83.789	99,492	45,325	73,645	109,713	85,075	.....

THE country's needs in pig iron, based on the gradual expansion of production over a term of years, are today theoretically 100,850 tons per day. In January, 1924, the theoretical daily needs were 97,950 tons. In the interval, actual production has been deficient or in excess as shown by the length of the bars on either side of the vertical line. A bar length of 1 in. is equivalent to 25,000 tons.

April needs, 100,657 tons a day; production, 108,632; excess of production, 7975 tons.
May needs, 100,838 tons a day; production, 94,542; deficiency in production, 6296 tons a day.



The following furnaces were blown in during May:

Delaware River furnace in the Schuylkill Valley; one Steelton furnace of the Bethlehem Steel Corporation in the Lower Susquehanna Valley; one River furnace in central Ohio; one Bessemer furnace of the Tennessee Coal, Iron & Railroad Co. in Alabama.

The following furnaces were blown out or banked during May:

One Susquehanna furnace and one Lackawanna furnace of the Bethlehem Steel Corporation in the Buffalo district; one furnace at the Bethlehem plant of the Bethlehem Steel Corporation in the Lehigh Valley; one Warwick furnace in the Schuylkill Valley; one Steel-

Production of Coke and Anthracite Pig Iron in United States by Months, Beginning Jan. 1, 1921—Gross Tons

	1921	1922	1923	1924	1925
Jan.	2,416,292	1,644,951	3,229,604	3,018,890	3,370,336
Feb.	1,937,257	1,629,991	2,994,187	3,074,757	3,214,143
Mar.	1,595,522	2,035,920	3,523,868	3,466,086	3,564,247
Apr.	1,193,041	2,072,114	3,549,736	3,233,428	3,258,958
May	1,221,221	2,306,679	3,867,694	2,615,110	2,930,807
June	1,064,833	2,361,028	3,676,445	2,026,221	.....
½ year.	9,428,166	12,050,683	20,841,534	17,434,492	.....
July	864,555	2,405,365	3,678,334	1,784,899	.....
Aug.	954,193	1,816,170	3,449,493	1,887,145	.....
Sept.	985,529	2,033,720	3,125,512	2,053,264	.....
Oct.	1,246,676	2,637,844	3,149,158	2,477,127	.....
Nov.	1,415,481	2,849,703	2,894,295	2,509,673	.....
Dec.	1,649,086	3,086,898	2,920,982	2,961,702	.....
Year*	16,543,686	26,880,383	40,059,308	31,108,302	.....

*These totals do not include charcoal pig iron. The 1924 production of this iron was 212,710 tons.

Daily Rate of Pig Iron Production by Months—Gross Tons

	Steel Works	Merchant	Total
May, 1924	62,176	22,182	84,358
June	50,237	17,304	67,541
July	43,353	14,224	57,577
August	45,591	15,284	60,875
September	50,312	18,130	68,442
October	59,952	19,955	79,907
November	63,230	20,426	83,656
December	76,682	18,857	95,539
January, 1925	86,856	21,864	108,720
February	90,707	24,084	114,791
March	90,741	24,234	114,975
April	83,827	24,805	108,632
May	74,415	20,127	94,542

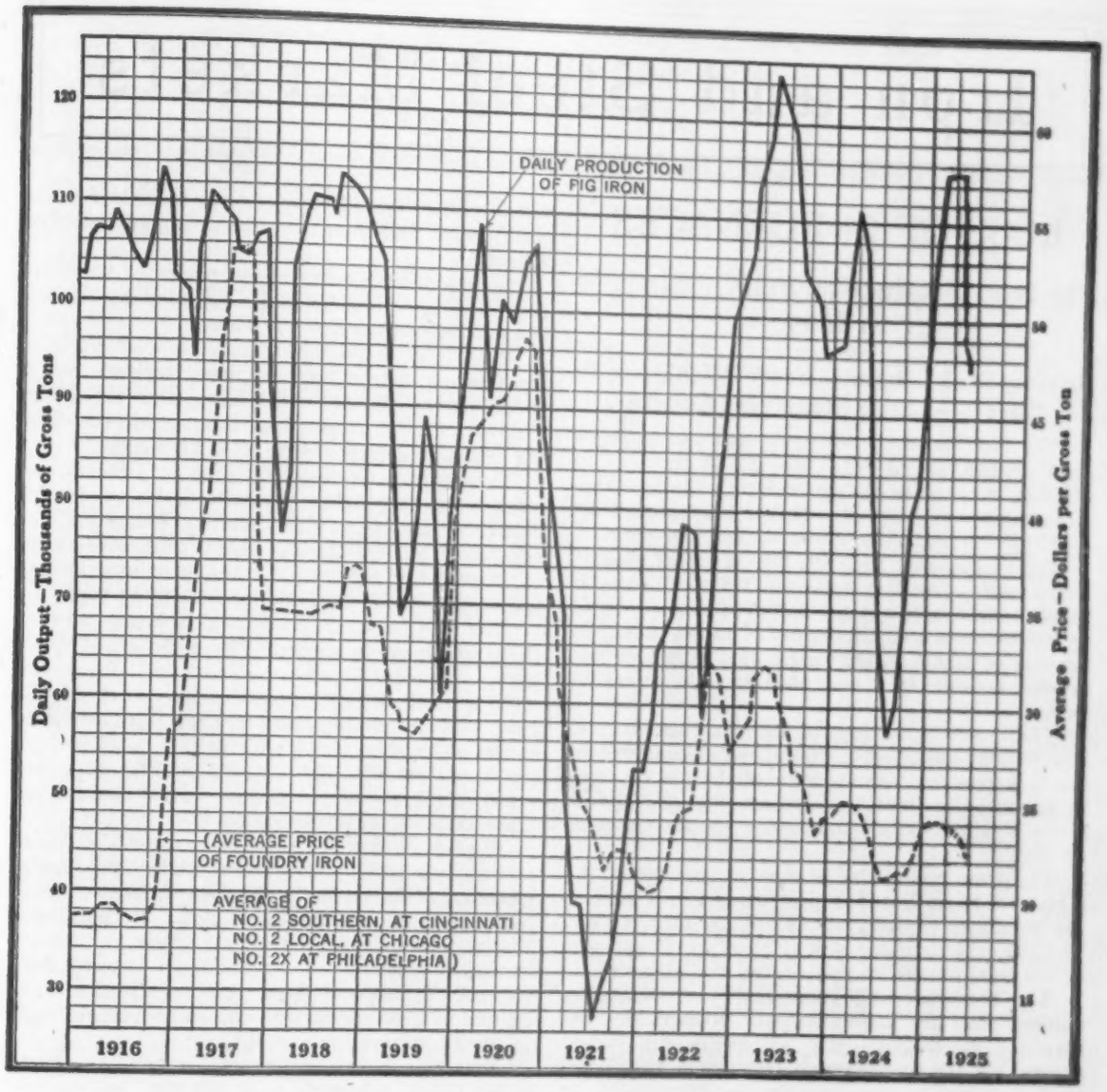
Production of Steel Companies—Gross Tons

	Total Production†		Spiegeleisen and Ferromanganese*			
			1924		1925	
	1924	1925	Fe-Mn	Spiegel	Fe-Mn	Spiegel
Jan.	2,274,005	2,692,537	20,735	7,948	23,578	5,418
Feb.	2,410,658	2,539,785	22,405	9,870	18,184	4,910
Mar.	2,674,565	2,812,995	22,351	13,796	20,062	5,449
Apr.	2,463,027	2,514,828	23,580	4,240	21,448	5,341
May	1,927,461	2,306,887	14,993	9,336	22,679	5,294
June	1,507,110	.....	20,049	9,405	.....	.....
½ year.	13,256,826	.....	124,113	54,595	.....	.....
July	1,343,952	.....	14,367	15,328	.....	.....
Aug.	1,413,314	.....	10,718	8,010	.....	.....
Sept.	1,509,360	.....	13,263	5,033	.....	.....
Oct.	1,858,502	.....	7,780	10,047	.....	.....
Nov.	1,896,886	.....	13,448	8,835	.....	.....
Dec.	2,377,141	.....	21,220	5,284	.....	.....
Year.	23,656,981	.....	204,909	107,132	.....	.....

*Includes output of merchant furnaces.
†Ferromanganese and Spiegeleisen included.

Pig Iron Production by Districts, Gross Tons

	May (31 days)	April (30 days)	March (31 days)	Feb. (28 days)
New York	143,770	192,405	217,038	207,012
New Jersey	.....	.....	.....	.....
Lehigh Valley	70,618	81,612	81,610	72,616
Schuylkill Valley	61,427	67,030	86,622	82,104
Lower Susquehanna and Lebanon Valleys	32,322	40,191	46,580	36,609
Pittsburgh district	582,356	668,623	785,487	709,709
Shenango Valley	88,589	125,322	163,222	142,088
Western Pa.	117,812	135,366	150,571	130,175
Maryland, Virginia and Kentucky	84,766	94,550	102,205	76,978
Wheeling district	110,328	126,385	142,323	136,237
Mahoning Valley	287,521	319,973	339,160	316,679
Central and Northern Ohio	322,959	306,483	315,802	292,109
Southern Ohio	47,450	42,999	39,804	42,601
Illinois and Indiana	595,273	635,479	703,000	622,987
Mich., Minn., Mo., Wis., Colo. and Utah	138,073	130,840	130,128	115,315
Alabama	241,611	285,351	253,820	224,679
Tennessee	5,932	6,349	6,875	6,245
Total	2,930,807	3,258,958	3,564,247	3,214,143



Sharp Decline in Pig Iron Production in May; Prices Also Lower

ton furnace of the Bethlehem Steel Corporation in the Lower Susquehanna Valley; six furnaces of the Carnegie Steel Co. and two furnaces of the Jones & Laughlin Steel Corporation in the Pittsburgh district; the Claire and Sharpsville furnaces in the Shenango Valley; two Johnstown furnaces of the Bethlehem Steel Corporation in western Pennsylvania; the Oriskany furnace in Virginia; the Norton furnace in Kentucky; one Mingo furnace of the Carnegie Steel Co. in the Wheeling district; Grace furnace of the Youngstown Sheet & Tube Co. and one Ohio furnace of the Carnegie Steel Co. in the Mahoning Valley; one Gary furnace, one Iroquois furnace and one furnace at South Chicago of the Illinois Steel Co. in the Chicago district; one Hattie Ensley furnace of the Sloss-Sheffield Steel & Iron Co. in Alabama and the Rockville furnace in Tennessee.

Eastern Pig Association Will Continue

The Eastern Pig Iron Association, which about two months ago considered a resolution to disband, has favorably considered a committee report recommending a reorganization and this new plan will probably be put into effect at an early meeting. In the new organization all sellers of pig iron, brokers, merchants or owners of furnaces, will be admitted to membership on an even basis. The association, however, will discontinue the reporting of statistics of production, sales, etc., which formerly were a regular part of each month's proceedings.

Now 397 Blast Furnaces in Country

One of the blast furnaces at the Steelton, Pa., plant of the Bethlehem Steel Corporation has been ordered dismantled, leaving five stacks at that plant.

The blast furnace of the Woodstock Operating Corporation at Anniston, Ala., has been dismantled.

The loss of these two furnaces brings the total number of coke blast furnaces in the country capable of making pig iron to 397.

Old Material Unchanged at Detroit

DETROIT, June 2.—Market on old material is firm, with no price changes over quotations of a week ago. Automotive schedules for the month remain on a high production basis, equal to May. Furnace, stove and radiator manufacturers are operating all near to capacity.

The following prices are quoted on a gross ton basis f.o.b. producers' yards, excepting stove plate, No. 1 machinery cast and automobile cast, which are quoted on a net ton basis:

Heavy melting and shoveling steel	$13.50 to $14.00
Borings and short turnings	10.25 to 10.75
Long turnings	10.00 to 10.50
No. 1 machinery cast	15.00 to 16.00
Automobile cast	21.00 to 22.00
Hydraulic compressed	11.75 to 12.25
Stove plate	14.50 to 15.50
No. 1 busheling	12.00 to 12.50
Sheet clippings	8.75 to 9.25
Flashings	10.50 to 11.00

Iron and Steel Markets

LOSS OF 24 FURNACES

Pig Iron Production Fell Off Sharply in May

Buying Still Liberal—Fresh Weakness in Sheets—Large Structural Orders

The fact that for three weeks now the country's steel production has held close to 70 per cent of capacity is taken as the measure of a nearly stabilized market, in contrast with the very abrupt descent of the production curve in May last year.

Pig iron output, however, fell off rather sharply last month. The May total was 2,930,807 tons, or 94,542 tons a day, against 3,258,958 tons in April, or 108,632 tons a day, a decline of 13 per cent. Of the loss of about 14,000 tons a day, 9400 tons was in steel-making iron and 4600 tons in merchant iron.

There was a net loss of 24 in active furnaces last month—10 Steel Corporation, 8 independent and 6 merchant. The capacity of the 196 furnaces in operation on June 1 is estimated at 89,500 tons a day, against 100,800 tons a day for 220 furnaces on May 1.

Pig iron production is now at practically the same rate as on Dec. 1, representing 68 per cent of the country's capacity of 48,000,000 tons a year. The 196 coke furnaces now in blast are 49 per cent of the total of 397 carried on the available list.

The character and volume of new buying in finished steel are little changed. Numerically, orders are increasing. Mill shipments still exceed orders, but the improvement last month in the latter is expected to show in a smaller May decline in unfilled orders than the 420,000 tons average for March and April.

The rate of current consumption is obscured by lack of data on consumers' stocks. Jobbers generally have good sized stocks, as have the larger consumers, but if all consumers had been real hand-to-mouth buyers in the past three months, the decline in production would have meant some decline in consumption.

Sheets are still conspicuous for the stress producers are putting on getting orders even at greater price cuts. The weakness has now extended to automobile body sheets, which are $2 a ton lower within the week.

Concessions on cold-rolled strip steel are also growing, and as low as 3.50c. is reported.

Pig iron buying in the Middle West is still on a liberal scale, though at Cleveland, where the activity has been greatest, the great total of the preceding week was not reached. In May no less than 350,000 tons was closed there. In other centers large interests that often sense the low point have bought fair sized lots for third quarter, or are negotiating. Some low prices have been made in private deals.

With structural steel awards of about 38,300 tons, the week ranks as one of the most active of the year in building contracts. More than 8000 tons is in oil tanks.

Chicago plate mills, which have been much in need of tonnage, are booking considerable steel for the oil fields, oil storage tank awards for the week being 8400 tons for Baton Rouge and Los Angeles.

Of 54,000 base boxes of tin plate for the Nippon Oil Co., one-half will be supplied by American makers and one-half by Wales.

Reports of deliveries of Belgian wire nails in the Chicago district have not been verified, but it is known that foreign nails have been landed at Gulf ports at $2.75 per keg, duty paid, which is the ordinary domestic price at Pittsburgh.

French bids on cast iron pipe at Detroit last week were the highest submitted, being $46.50, delivered, on 24-in. pipe, against $43.80 by the successful bidder. In all 14,000 tons was taken by domestic foundries. At the previous letting last month, the French bidder took 3000 tons.

The rise in scrap prices which began two or three weeks ago is supported by a moderate movement. At Pittsburgh the advance on heavy melting steel is $1.50 over the low point of the year, while at Steubenville $18 a ton has been paid, or 50c. more than last week's price. A 25,000-ton purchase in the Chicago district, the first by a consumer since the scrap market turned firmer, established a 50c. advance this week.

Steel demand in England is so poor that some makers are looking for relief under the "safeguarding of industries" act. Low franc exchange hampers trade on the Continent. German and French interests have resumed their conference looking to exchange of ore and semi-finished steel for coke. Large German steel companies have agreed to give special low prices to rolling mills on steel intended for export.

American machinery exports in April amounted to $36,033,980; imports to $1,167,099. In the ten months ended April 30, exports of machinery were $277,812,533; imports $8,624,951. About the same proportion holds in metal-working machinery.

Pittsburgh

Seek Steel Orders to Sustain Production —Pig Iron Buying

PITTSBURGH, June 2.--Steel orders still are increasing but the gain continues to be in number rather than in size. Buyers seem to have quite definitely adopted the policy of covering against their requirements only as they arise and in nearly all cases purchases are for early delivery and many of them carry "rush" shipment tags. So short ranged is the buying that few mills can schedule as much as two weeks ahead and as a general rule a week is about as far ahead as steel makers can definitely figure their operations.

The past week has brought no material change in rate of steel works or rolling mill operations. The general average of ingot production for this and nearby districts is holding around 65 per cent and this having now been the rate for about three weeks, it is rather conclusive evidence that the industry has output pretty well gaged to demand. The Carnegie Steel Co. has taken off two blast furnaces in the week and the Jones & Laughlin Steel Corporation one, leaving the former company with 28 and the latter with 7 in production.

In some directions there is still a tendency to oper-

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	June 2, 1925	May 26, 1925	May 5, 1925	June 3, 1924
No. 2X, Philadelphia‡	$21.26	$21.26	$21.76	$22.13
No. 2, Valley furnace†	18.50	18.50	20.00	20.00
No. 2, Southern, Cin'ti†	24.05	24.05	24.05	25.05
No. 2, Birmingham, Ala.†	20.00	20.00	20.00	21.00
No. 2 foundry, Chicago*	20.50	20.50	22.00	22.00
Basic, del'd, eastern Pa.	21.50	21.50	21.00	21.00
Basic, Valley furnace	18.25	18.25	20.00	20.00
Valley Bessemer del. P'gh	*20.76*	21.26	22.76	23.26
Malleable, Chicago*	20.50	20.50	22.00	22.00
Malleable, Valley	*18.50*	19.00	20.00	20.00
Gray forge, Pittsburgh	19.76	19.76	21.26	21.26
L. S. charcoal, Chicago	29.04	29.04	29.04	29.15
Ferromanganese, furnace	115.00	115.00	115.00	107.50
Rails, Billets, etc. Per Gross Ton:				
O.-h. rails, heavy, at mill	$43.00	$43.00	$43.00	$42.00
Bess. billets, Pittsburgh	35.00	35.00	35.50	38.00
O.-h. billets, Pittsburgh	35.00	35.00	35.50	38.00
O.-h. sheet bars, P'gh	35.00	35.00	37.00	40.00
Forging billets, base, P'gh	40.00	40.00	40.50	43.00
O.-h. billets, Phila	*40.17*	40.67	41.17	43.17
Wire rods, Pittsburgh	46.00	46.00	46.00	48.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb	2.00	2.00	2.00	2.20
Light rails at mill	*1.70*	1.75	1.75	1.90
Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.22	2.22	2.22	2.42
Iron bars, Chicago	2.05	2.05	2.10	2.25
Steel bars, Pittsburgh	2.00	2.00	2.00	2.20
Steel bars, Chicago	2.10	2.10	2.10	2.25
Steel bars, New York	2.34	2.34	2.34	2.54
Tank plates, Pittsburgh	2.00	2.00	2.00	2.20
Tank plates, Chicago	2.20	2.20	2.20	2.40
Tank plates, New York	2.24	2.24	2.24	2.34
Beams, Pittsburgh	2.00	2.00	2.00	2.20
Beams, Chicago	2.20	2.20	2.20	2.45
Beams, New York	2.34	2.34	2.34	2.44
Steel hoops, Pittsburgh	2.40	2.40	2.40	2.75

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

Sheets, Nails and Wire,	June 2, 1925	May 26, 1925	May 5, 1925	June 3, 1924
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh	3.20	3.20	3.20	3.60
Sheets, black, No. 28, Chicago dist. mill	3.40	3.40	3.40	...
Sheets, galv., No. 28, P'gh	4.25	4.25	4.30	4.80
Sheets, galv., No. 28, Chicago dist. mill	4.50	4.50	4.50	...
Sheets, blue, 9 & 10, P'gh	*2.35*	2.40	2.40	2.80
Sheets, blue, 9 & 10, Chicago dist. mill	2.50	2.50	2.50	...
Wire nails, Pittsburgh	*2.70*	2.75	2.75	2.90
Wire nails, Chicago dist. mill	2.85	2.85	2.85	...
Plain wire, Pittsburgh	2.50	2.50	2.50	2.65
Plain wire, Chicago dist. mill	2.60	2.60	2.60	...
Barbed wire, galv., P'gh	3.45	3.45	3.45	3.70
Barbed wire, galv., Chicago dist. mill	3.55	3.55	3.55	...
Tin plate, 100 lb. box, P'gh	$5.50	$5.50	$5.50	$5.50
Old Material, Per Gross Ton:				
Carwheels, Chicago	$16.75	$16.25	$16.00	$16.00
Carwheels, Philadelphia	17.00	17.00	17.00	17.00
Heavy steel scrap, P'gh	17.50	17.00	16.00	15.50
Heavy steel scrap, Phila	15.00	15.00	14.50	15.00
Heavy steel scrap, Ch'go	16.00	15.50	14.75	13.75
No. 1 cast, Pittsburgh	17.50	17.50	17.50	17.50
No. 1 cast, Philadelphia	17.50	17.00	17.00	17.50
No. 1 cast, Ch'go (net ton)	17.50	17.50	17.00	17.00
No. 1 RR. wrot. Phila	17.50	17.50	17.50	16.50
No. 1 RR. wrot. Ch'go (net)	14.50	14.00	13.00	11.75
Coke, Connellsville,				
Per Net Ton at Oven:				
Furnace coke, prompt	$2.85	$3.00	$3.00	$3.25
Foundry coke, prompt	4.00	4.00	4.00	4.50
Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	13.62½	13.62½	13.75	12.87½
Electrolytic copper, refinery	13.37½	13.37½	13.37½	12.50
Zinc, St. Louis	7.05	7.07½	6.92½	5.80
Zinc, New York	7.40	7.42½	7.27½	6.15
Lead, St. Louis	8.25	8.05	7.45	6.95
Lead, New York	8.60	8.40	7.75	7.00
Tin (Straits), New York	*54.87½*	55.75	54.62½	40.75
Antimony (Asiatic), N. Y.	17.00	17.00	13.00	8.50

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

THE IRON AGE Composite Prices

June 2, 1925, Finished Steel, 2.460c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 88 per cent of the United States output of finished steel.

May 26, 1925,	2.460c.
May 5, 1925,	2.460c.
June 3, 1924,	2.624c.
10-year pre-war average,	1.689c.

June 2, 1925, Pig Iron, $19.42 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham.

May 26, 1925,	$19.42
May 5, 1925,	20.83
June 3, 1924,	20.86
10-year pre-war average,	15.72

	High				Low		
	1923	1924	1925		1925	1924	1923
Finished Steel	2.824c., April 24	2.789c., Jan. 15	2.560c., Jan. 6		2.460c., May 5	2.460c., Oct. 14	2.446c., Jan. 2
Pig Iron	$30.86, March 20	$22.88, Feb. 26	$22.50, Jan. 13		$19.42, May 26	$19.21, Nov. 3	$20.77, Nov. 20

ate finishing mills at a higher rate than the demand will support, and where this has been the policy further recessions in prices have occurred. The most notable example of this sort is found in sheets, some makers of which have felt that their lowest producing costs were in very full operations and to get the orders sufficient to sustain such a production, they have had to make prices very attractive to buyers. The week has brought even lower prices than previously had been noted in automobile body and blue annealed sheets. The surprising feature of the situation is that manufacturers are encountering very little, if any, price resistance and the low prices simply are the result of the efforts of producers to get orders increased.

Competition for business is noted in cold finished steel bars in which there has been a drop of $2 a ton in prices. The appearance of a price of $2.70, base, per keg for nails makes it apparent that larger orders have been partly at the expense of prices. Sales of cold rolled strips below the recently reduced price are also among the week's developments. Meanwhile, there is a good deal of stability to the market on plates, shapes and bars so far as the Pittsburgh district is concerned, and pipe and tin plate prices also are holding very steadily. In the latter products, there is a really good business and the prospect for the remainder of the year is bright.

The low price to which pig iron has descended is stimulating more interest from consumers and in point of sales of foundry iron the past week has been the

best in some time. Moreover, negotiations are in progress which it is estimated will result in the transfer of as much as 75,000 tons for delivery over the third and fourth quarters of the year. Bessemer iron is slightly weaker but generally the iron market gives signs of being at or close to a point below which producers will hesitate about going. There is a strong tone to the scrap market with local demand moderate but offerings even more moderate. The fuel situation is no stronger than it has been.

Pig Iron.—It begins to look as though the decline in prices which has carried this market down to the lowest average level since the war had about run its course. In the past week or ten days there has been a considerable quickening in the demand for foundry iron and somewhat more interest in other grades than there was recently. The best part of the situation is that a very large tonnage of foundry iron still is under negotiation and it is figured that within the next week or ten days sales of this grade aggregating possibly 75,000 tons will have been closed. The Standard Sanitary Mfg. Co. has put out an inquiry for approximately 50,000 tons of No. 2 and No. 2X iron for its Pittsburgh and New Brighton, Pa., plants for delivery over the last six months of the year and will follow purchases for those plants by placing 20,000 or 25,000 tons for its Louisville plant. Practically all of the other sanitary ware manufacturers are negotiating for third quarter tonnages and the Westinghouse Electric & Mfg. Co. is expected to follow up its recent inquiry for 34,000 tons of foundry iron for its Cleveland works by an inquiry for either its third quarter or last half requirements for its Trafford, Pa., works. The common quotation on foundry iron now is $18.50 for Valley furnace for No. 2 for either spot or third quarter shipment, but this price is so well below producing costs that most makers are disinclined to accept it for tonnages for shipment after Oct. 1. There is still a feeling that there will be a suspension of the hard coal mines around Sept. 1, when the present wage scale agreement expires and this might well have a strengthening effect upon coke prices and in turn upon pig iron producing costs. Follansbee Brothers Co. is inquiring for 2000 to 3000 tons of basic iron for third quarter shipment but outside of this inquiry the market is rather slow on that grade and quotations are nominal. Sales of Bessemer iron have been made as low as $19, Valley furnace, but there are some producers who still are holding to $19.50 and expect to obtain it. A recent sale of this grade amounting to 1000 tons was made at $19, Valley furnace basis, the iron to be supplied by a local steel company which has decided to enter the merchant market and to produce Bessemer and foundry iron in addition to the basic grade. Malleable iron now is quotable at $18.50 to $19, the determining factor being the silicon content. W. P. Snyder & Co. make the average price of basic iron from Valley furnaces in May $18.50 and of Bessemer iron $19.81.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being $1.76 per gross ton:

Basic	$18.25 to $18.50
Bessemer	19.00 to 19.50
Gray forge	18.00
No. 2 foundry	18.50
No. 3 foundry	18.00
Malleable	18.50 to 19.00
Low phosphorus copper free	27.75 to 28.00

Ferroalloys.—Inquiry for ferromanganese is better than it has been before in some time and while few actual sales or third quarter contracts are being closed, the evidence of larger interest on the part of consumers appears to have stiffened the price ideas of both domestic and British producers, who now have hopes of maintaining the present price. Beyond the fact that specifications are coming along steadily on contracts, there is nothing to report about the other ferroalloys. Prices are given on page 1685.

Semi-Finished Steel.—The market here lacks activity and by that token prices are untested. Mills continue to quote billets, slabs and sheet bars at $35, but that price rests on contract shipments, except for a few small open market sales of billets created by a rather good demand for mechanical tubes from the automotive industry. Specifications on contracts could be larger and not provide a real test of the ability of makers to meet them. The commercial supply of billets, slabs and sheet bars just now exceeds the outlet, since finishing capacity of producers is not overly well engaged. This also is the situation in wire rods, makers having a good deal more tonnage for market than they do when there is a lively market in the finished lines. The effort still is being made to secure a premium of $10 a ton over rolling billets for forging quality, but not all makers are participating in the movement, leaving the premium anywhere from $5 to $10. Skelp is dull at 2c. Prices are given on page 1685.

Wire Products.—Business still is expanding in point of the number of orders, but it still lacks volume and the appearance of $2.70, base, per keg, Pittsburgh, for nails, rather indicates that some of the gain in orders has been at the expense of prices. Throughout the year to date, wire has shown more price stability than nails and that is true now, as there has been no important shading in this territory of the base price of $2.50 per 100 lb. The market west of Pittsburgh still is very irregular and weak, particularly in the lower Ohio valley, where river shipments have made possible very low delivered prices and competition for orders has been sharp. As briefly noted in THE IRON AGE last week, there has been a revision of size extras, which brings down slightly the prices of the coarser gages. Wire coarser than ½ in. in a new card, recently issued by the leading producer and adopted by other makers, calls for an extra of 20c. per 100 lb. in bright hard wire, from ⅜ to ½ in., 10c. per 100, while wire finer than ⅜ in. to and including No. 9 gage, now sells at the base price. In the old card, No. 5 gage to ¼ in. called for an extra of $1 per ton and coarser than ¼ in. an extra of $2 per ton. A reduction of 25c. per 100 lb. in the galvanizing extra on nails recently became general. Prices are given on page 1684.

Rails and Track Supplies.—There is a fairly good movement of standard rails on contracts, but other products under this heading are moving slowly, particularly light rails. The continued depression in the coal industry keeps light rail requirements to a minimum and it is hard to say what price would be brought out by an inquiry for more than a carload. On the small lots sought, 1.75c., base mill, is the usual billet rail quotation, but as many orders are lost as obtained at that price. Small spikes also are very dull. Action on the Atlantic Coast Line inquiry for 10,000 kegs of standard spikes is expected this week; this business is for specification after July 1. Prices are given on page 1684.

Tubular Goods.—Pipe orders are on an increasing scale, running particularly good in oil country goods. The report is that an enormous demand for gasoline is stimulating oil production, which also is helped by fairly high and rather well stabilized oil prices. Orders for standard pipe also are somewhat heavier than they were recently, but they are better from outside rather than in the Pittsburgh district, where jobbers appear to be overstocked and still are naming prices not much different than those quoted them by the mills. There is very little forward buying, but actual requirements are sufficient to give the leading producer an operation of 80 per cent or slightly better and the independents are doing well enough to give this branch of the steel industry an average operation of close to 75 per cent of capacity. Mechanical tubes are selling well to the automotive industry. Boiler tube business could be better. There is some shading of prices, but no more than there usually is and it is not sufficiently great to cause a revision of prices. Discounts are given on page 1684.

Sheets.—Reports of a better business are more numerous, but as price stability still is lacking, it is evident that the gains in sales still are at the expense of prices. The price weakness now embraces automobile body sheets, which hitherto have been fairly steady at 4.40c., base, Pittsburgh, for No. 22 gage, as an open market quotation. Lately, 4.30c., base, has appeared as an open price, not because of price resistance by buyers, but because of the desire of some makers to maintain operations high enough to keep down costs. Blue annealed sheets, which have been reasonably firm at 2.40c., base, Pittsburgh, have eased down on recent

sales to 2.35c. and 3.20c. on black sheets and 4.25c. on galvanized now are done on comparatively small tonnages. It is said on good authority that an operation of 75 per cent and a production of about 80 per cent of capacity would have easily taken care of the business of this year to date, but there was an average independent company production for the first four months of this year of over 91 per cent. Just now a number of mills are keeping up production and doing so by naming low prices. Others are not letting their regular customers go elsewhere and that briefly explains the weakness of prices. They are given on page 1684.

Tin Plate.—Not much strictly new business is developing, but the mills do not need much to maintain a high rate of operations, as contracts are large and consumers are specifying well against them. The outlook for the packing crops and the use of tin plate for containers still is very favorable; fully 60 per cent of the tin plate produced goes to perishable food containers and the demand for plate for other containers is good except possibly for paints and varnishes, where some falling off has been observed. Local mills still are quoting standard cokes at $5.50 per base box, Pittsburgh, subject to the usual preferentials to large consumers on domestic business.

Cold-Finished Steel Bars and Shafting.—There has been more new business before the market than there was recently, since a good many contracts had become exhausted, but on the test of demand, prices have weakened. With backlogs well worked off, a number of makers needed fresh business to keep up a fair rate of mill operations and some fairly large demands from the automobile parts makers came just at this time. The result was a dip to 2.60c., base, Pittsburgh. While there is still a quotation of 2.70c., it is chiefly on the small lot business, the weight of tonnage moving at the lower figure. Shafting demands are moderate.

Hot-Rolled Flats.—The market not only is fairly active, but there is a good deal of firmness to prices, particularly on stock narrower than 6 in., on which deviations from 2.40c., base, Pittsburgh, have been very few. On wider material up to 12 in. the market is well maintained at 2.20c. Wider than that, particularly on heavy gage steel, the jobbing and plate mill products have a bearing on the price. Prices are given on page 1684.

Cold-Rolled Strips.—This product vies with sheets in point of price weakness. It was supposed that a price of 3.75c., base, Pittsburgh or Cleveland, would prove low enough to check price cutting, but it does not appear to have done so, as the past week has brought a number of instances where 3.65c. has been done. The automotive industry is not stocking this material. but is buying frequently as the stock is needed and there is pretty keen competition among makers for business. The firmness of hot-rolled strips is counted upon in some quarters as likely to produce eventually a firmer market in cold-rolled strips.

Iron and Steel Bars.—The demand for merchant steel bars holds up very well and so far as the Pittsburgh district is concerned the price also is holding well. Contract specifications from makers of cold finished steel bars and bolts, nuts and rivets are fairly good. It is evident, however, that makers are not crowded with business as they are making very prompt deliveries against new business. Iron bars are steady with a fair demand. Prices are given on page 1684.

Structural Material.—There is no shading of minimum prices of 2c., Pittsburgh, for large structural beams in this market. In fact there is very close observance of that minimum and more of a tendency to pass up lower priced business than was true a month or so ago. Inquiry for fabricated steel is reported to be fairly good but ruling prices allow very little profit based on today's plain material price. Prices are given on page 1684.

Plates.—This market still feels the lack of railroad car orders. No new barge business lately has been placed and oil storage tank business is not very heavy. Quoted prices here still range from 2c. to 2.10c., base Pittsburgh, but sales above the lower figure are few and local mills going outside of their natural territory do not find even 2c. readily obtainable. Prices are given on page 1684.

Bolts, Nuts and Rivets.—Business in bolts and nuts is better than it has been with some makers here, but all admit that there is room for improvement. Prices are steady and the present quotations will probably be reaffirmed on third quarter contracts. The rivet market is weak as there are more sellers than buyers and competition for orders, particularly for those of size and for early delivery, is keen. Prices and discounts are given on page 1685.

Coke and Coal.—Spot coke prices still are easy, not because of an unusually large supply, but rather because there is so little demand. With the blast furnaces now in production covered by contracts, it is very hard for producers who have any surplus tonnages for spot shipment to find a market for them. Lately $3 has become both maximum and extreme and sales have been made as low as $2.85 per net ton at ovens. A good deal of selected furnace coke or coke that has been burned for 72 hr. has lately been coming on the market as foundry fuel at prices ranging all the way from $3.40 to $3.75 per net ton at ovens. Consumers, however, who want standard selected 72-hr. coke have not been able to find supplies below $4 and there are some brands made from washed coal that still are selling at $5 and even $5.50. The demand for coal is not heavy enough to tax the supply and prices still are in buyers' favor. Prices are given on page 1685.

Old Materials.—The market here continues to gain in strength, but the advance in prices is less marked here than in some other consuming centers. None of the mills in the Pittsburgh district has yet paid more than $17.50 for heavy melting steel, but a dealer has paid $18 for a round tonnage for Steubenville delivery and the market on this grade is quotable at that range. Certainly, there are no offerings at less than $17.50 and if there is any buying, $18 is a more probable minimum. The idea is fairly common here that the recovery from the recent low point, which amounts to about $1.50 a ton, is nothing more than a flurry, caused partly by the strength outside, where the prices of scrap have an important influence upon finished steel prices, and partly by dealers, anxious to enhance the value of their yard stocks, by bidding the same price or more than they sold for. The outlook is for smaller rather than larger steel works operations over the next 60 days and a demand for scrap is regarded as a little previous. Compressed sheet scrap commands a relatively high price, because it is of so much better quality than much of the material now being offered as heavy melting grade. A local steel mill has paid up to $16 for heavy breakable cast and as high as $13.50 for turnings. The foundry grades are slow. The Pennsylvania June scrap list contains about 52,000 net tons and June lists of other railroads are said to be heavy. Because of the recent price enhancement, it is believed these offerings will fetch high prices.

We quote for delivery to consumers' mill in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

	Per Gross Ton	
Heavy melting steel	$17.50 to	$18.00
No. 1 cast, cupola size	17.50 to	18.00
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa.	17.50 to	18.00
Compressed sheet steel	16.50 to	17.00
Bundled sheets, sides and ends	15.50 to	16.00
Railroad knuckles and couplers	19.00 to	19.50
Railroad coil and leaf springs	19.00 to	19.50
Low phosphorus blooms and billet ends	22.00 to	22.50
Low phosphorus plate and other material	21.00 to	21.50
Railroad malleable	17.00 to	17.50
Steel car axles	19.50 to	20.00
Cast iron wheels	17.00 to	17.50
Rolled steel wheels	19.00 to	19.50
Machine shop turnings	13.00 to	13.50
Short shoveling turnings	13.00 to	13.50
Sheet bar crops	20.00 to	20.50
Heavy steel axle turnings	16.50 to	17.00
Short mixed borings and turnings	13.00 to	13.50
Heavy breakable cast	15.50 to	16.00
Stove plate	13.50 to	14.00
Cast iron borings	13.00 to	13.50
No. 1 railroad wrought	14.00 to	14.50
No. 2 railroad wrought	17.50 to	18.00

Chicago

Steel Buying Only for Nearby Needs—Pig Iron Hesitant

CHICAGO, June 2.—New buying of finished steel is still limited largely to orders calling for early deliveries. In the heavier lines shipments remain in excess of sales, but the disparity between them is being reduced. New bookings in May are estimated at fully 15 per cent over those of April. Prices on bars, plates and shapes are unusually steady, although now and then an exceptional concession is reported. A recent sale of a relatively unimportant tonnage of structural shapes is reported to have gone at as low as 2.05c., Chicago, but so far as can be learned the material did not come from a regular source of supply. Demand for sheets and wire products shows little, if any, improvement and prices remain weak.

Reports of deliveries of Belgian wire nails in the Chicago district cannot be verified, but it is well established that foreign nails have been landed at the Gulf ports at $2.75, seaboard, duty paid. French bids on cast iron pipe at Detroit were the highest submitted and the lowest tenders of American companies were several dollars a ton above the prices at which that city bought pipe a month ago.

Local plate mills, which have been in great need of tonnage, are booking considerable steel for the oil fields, oil storage tanks awards for the week totaling nearly 9000 tons. The St. Paul has placed 1000 additional freight cars, but half of them will be built by a Pennsylvania car builder so that only 5000 tons of steel will be rolled here.

The two leading local steel works continue to produce at 88 to 90 per cent of ingot capacity and blast furnace operations in this district are unchanged.

Pig Iron.—Buying is still hesitant, although inquiries are more numerous. A melter at an outlying point in the Chicago district is in the market for 3500 tons of malleable and 4500 tons of foundry iron for June to November shipment. Local prices show no further change except that on foundry and malleable $20.50, local furnace, is rather generally quoted, barring small tonnages. Lake Erie producers, however, have recently booked business at as low as $18.50, base furnace, and their competition has been felt in Indiana and Michigan. Charcoal is holding at $26, furnace. A Michigan melter has closed for 500 tons of charcoal iron for delivery over the remainder of the year. Southern foundry is still available at $18, base Birmingham, or $24.01, delivered, but some tonnage for barge and rail shipment has been placed at even lower delivered prices. A purchase of 300 tons of 6 per cent silvery for third quarter shipment is reported. On the lower grades of silvery, concessions below the Jackson County schedule do not exceed $1, but on the higher silicon grades the market is still decidedly weak. An inquiry for 50 tons of low phosphorus is current. Prices of this commodity will be watched closely from now on, in view of the scheduled blowing in of the Thomas furnace, which will produce low phosphorus as well as other grades of pig iron. There have been no recent sales of 14 to 16 per cent ferrosilicon to indicate what ruling prices are.

Stocks of most melters have been reduced to low levels and in many cases do not exceed 30 days' supply.

Quotations on Northern foundry, high phosphorus, malleable and basic irons are f.o.b. local furnaces and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards.

Northern No. 2 foundry, sil. 1.75 to 2.25	$20.50 to $21.00
Northern No. 1 foundry, sil. 2.25 to 2.75	21.00 to 21.50
Malleable, not over 2.25 sil.	20.50 to 21.00
Basic	20.00 to 21.00
High phosphorus	20.50 to 21.00
High Superior charcoal, averaging sil. 1.50, delivered at Chicago	29.04
Southern No. 2, sil. 1.75 to 2.25	24.01
Low phos., sil. 1 to 2 per cent, copper free	32.65
Silvery, sil. 8 per cent	31.29
Electric ferrosilicon, 14 to 16 per cent	43.42

Ferroalloys.—Quotations on spiegeleisen are said to have grown firmer, with $39.04 delivered the lowest available price, but there have been no sales to test the market. Ferromanganese is quiet.

We quote 80 per cent ferromanganese, $122.56, delivered; 50 per cent ferrosilicon for 1925 delivery, $85, delivered; spiegeleisen, 18 to 22 per cent, $37.58 to $38.04, delivered.

Plates.—A strong demand for gasoline, coupled with a reduction in the visible supply of oil, has stimulated drilling operations as well as the provision of added storage facilities. The Humble Oil Co. has placed 15 tanks, 4500 tons, for Baton Rouge, La., with the Chicago Bridge & Iron Works. The Pan-American Petroleum & Transport Co., Los Angeles, has awarded 10 tanks, 3870 tons, to the American Bridge Co. Over 3300 tons of miscellaneous tank work is pending. A local mill has booked 8300 tons of plates for tanks recently placed. The St. Paul has ordered 1000 additional freight cars, but 500 will be built by an Eastern car builder, so that only one half the tonnage required, or 5000 tons, will be rolled here. Plate prices are steady and unchanged.

The mill quotation is 2.20c., Chicago. Jobbers quote 3.10c. for plate out of stock.

Structural Material.—Fabricating awards for the week bulk large, totaling 13,800 tons, but nearly 9000 tons was accounted for by three oil storage tank contracts. A Masonic temple, New Orleans, 3000 tons, was placed with the Virginia Bridge & Iron Co. Fresh inquiries are light. Plain material is firm at 2.20c., Chicago.

The mill quotation on plain material is 2.20c., Chicago. Jobbers quote 3.10c. for plain material out of warehouse.

Bars.—The bulk of soft steel bar tonnage is coming from the automotive and farm equipment industries. New business, while confined to purchasers for quick shipment, is heavier than a month ago. The situation among jobbers is rather quiet and they are not figuring prominently either with respect to specifications or fresh orders with the mills. Soft steel bar prices continue to range from 2.10c. to 2.20c., Chicago. Current orders for bar iron are limited largely to relatively small tonnages for nearby or prompt delivery. The Republic Rolling Mill Corporation, however, started operations at its East Chicago plant June 1 with all of its mills running. Bar iron is freely offered at 2.05c., Chicago, with competition exceedingly keen at that figure. Rail steel bars are unsteady at 2.10c., mill, concessions of $2 a ton being less exceptional than before.

Mill prices are: Mild steel bars, 2.10c. to 2.20c.; common bar iron, 2.05c., Chicago; rail steel, 2.10c., Chicago mill.

Jobbers quote 3c. for steel bars out of warehouse. The warehouse quotations on cold-rolled steel bars and shafting are 3.80c. for rounds and hexagons and 4.30c. for flats and squares; 4.15c. for hoops and 3.65c. for bands.

Jobbers quote hard and medium deformed steel bars at 2.60c. to 2.70c.

Sheets.—Another week has passed without developing further weakness in prices. Current orders, although restricted to small tonnages for early shipment, are somewhat more numerous. Mills hope for revival of buying by the middle of August, or possibly earlier. Meanwhile hot weather is crippling production. The operations of a Western independent do not exceed 60 per cent of capacity.

Chicago delivered prices from mill are 3.45c. to 3.50c. for No. 28 black, 2.55c. to 2.60c. for No. 10 blue annealed and 4.55c. to 4.60c. for No. 28 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Jobbers quote f.o.b. Chicago: 3.80c. base for blue annealed, 4.50c. base for black, and 5.50c. base for galvanized.

Wire Products.—Reports that Belgian wire nails have been sold for delivery in this territory lack verification, but sales at Gulf ports have been made at $2.75, seaboard, duty paid. In this section wire nails are still held at $2.85, f.o.b. Chicago district mills, and bright wire at $2.60, but both of these prices are weak and subject to shading. Cement coated nails, by far the weakest among the wire products, are not bringing more than $2, Chicago district mill. New business in wire products is light and mill operations range from 50 to 60 per cent. Jobbers who bought heavily during the winter months in anticipation of an active spring

demand, which failed to materialize, are interested in disposing of their stocks rather than in the purchase of fresh supplies.

We quote warehouse prices f.o.b. Chicago: No. 8 black annealed wire, $3.05 per 100 lb.; common wire nails, $3.15 per keg; cement coated nails, $2.45.

Rails and Track Supplies.—Prices are steady except on tie plates and concessions on that commodity are said to be limited to one Western mill. The Missouri Pacific has closed for 3100 tons of tie plates, placing 1000 tons each with the Scullin Steel Co. and Colorado Fuel & Iron Co. and 1100 tons with the Tennessee Coal, Iron & Railroad Co.

Standard Bessemer and open-hearth rails, $43; light rails, rolled from billets, 1.80c. to 1.90c., f.o.b. makers' mill.

Standard railroad spikes, 2.90c. to 3c. mill; track bolts with square nuts, 3.90c. to 4c. mill; steel tie plates, 2.35c., f.o.b. mill; angle bars, 2.75c. f.o.b. mill.

Jobbers quote standard spikes out of warehouse at 3.55c. base, and track bolts, 4.55c. base.

Cast Iron Pipe.—Bids taken by Detroit May 29 on over 14,000 tons of 6 to 24-in., did not bring out the low figures at which that city bought a similar tonnage a month ago. Moreover, the French, represented by D. Nicoll & Co., New York, were underbid on every item by their American competitors. The lowest bidder on the 6, 8, 12 and 16-in. was the Lynchburg Foundry Co., which, however, did not quote on all of the tonnage in the case of the last three sizes. Its figure on the 6 and 8-in. was $45.30, delivered, or the equivalent of $37.38, base, Birmingham; on the 12-in., $44.80, delivered, or the equivalent of $36.88, Birmingham; and on the 16-in., $44.30, or $36.88, delivered. Although the Lynchburg quotation did not cover all of the 12 and 16-in. embraced in the inquiry, two other American bids were lower than the French tender of $47.25, delivered, or $39.33, Birmingham. In fact, the French bids, which were limited to 12, 16 and 24-in., were the highest submitted. On the 24-in. the quotation of the Nicoll company was $46.50, delivered, as against the low bid of the Standard Cast Iron Pipe Co. of $43.80, delivered, the equivalent of $35.88, base, Birmingham. This last figure was the lowest submitted on any size and compares with the lowest successful bid on the tonnage bought by Detroit a month ago, which figured back to $34.03, Birmingham, and applied on 3000 tons of 30-in. awarded to the French maker. Royal Oak, Mich., has awarded 1000 tons of 6 to 12-in. to James B. Clow & Sons. The United States Cast Iron Pipe & Foundry Co. has been awarded 120 tons of 16 and 24-in. for Hammond, Ind., and is low bidder on 414 tons for Dayton, Ohio. Medford, Wis., takes bids June 12 on 135 tons of 6-in. Minneapolis will receive tenders June 11 on 125 tons of 24-in. Outside of Detroit, where the exceptionally large tonnage and foreign competition were both considerations, the price situation appears to be substantially unchanged.

We quote per net ton, f.o.b. Chicago, as follows: Water pipe, 4-in., $51.70 to $52.20; 6-in. and over, $47.70 to $48.20; Class A and gas pipe, $4 extra.

Bolts and Nuts.—Price shading is steadily disappearing and in soliciting contracts for the third quarter practically all companies are quoting on the basis of 50 and 10 and 10 off on large machine bolts, with an extra 5 per cent off on carload orders. Specifications from the automobile industry are as heavy as ever, but those from the implement makers are tapering off, as their dull season approaches.

Jobbers quote structural rivets, 3.50c.; boiler rivets, 3.70c.; machine bolts up to ⅝ x 4 in., 55 per cent off; larger sizes, 55 off; carriage bolts up to ⅝ x 4 in., 50 off; larger sizes, 50 off; hot pressed nuts, squares, tapped or blank, $3.50 off; hot-pressed nuts, hexagons, tapped or blank, $4 off; coach or lag screws, 60 per cent off.

Reinforcing Bars.—Shipments of concrete bars by representative dealers during the first five months of this year are heavier than for the same period in 1924 and are nearly equal to those in 1923, which was the best year in history. Lettings include:

Bridge, Stevens Point, Wis., 250 tons, to Concrete Steel Co.

Addition to Astor Hotel, Milwaukee, Wis., 200 tons, to American System of Reinforcing.

Water works, Madison, Wis., 400 tons, to unnamed distributor.

Illinois State highway work, 200 tons, to Truscon Steel Co.

Illinois State highway work, 100 tons, to Kalman Steel Co.

Section 4 and 5 A, South Water Street improvement, Chicago, 700 tons, to Kalman Steel Co.

Section G, sewer, St. Paul, Minn., 275 tons, to American System of Reinforcing.

Valentine warehouse, Aurora, Ill., 100 tons, to Olney J. Dean & Co.

Factory for Theodore A. Koch, Chicago, 250 tons of rail steel, to Inland Steel Co.

Emerson school, St. Paul, Minn., 300 tons, to American System of Reinforcing.

Concrete Products Co., Milwaukee Manufacturing plant, 100 tons, to Truscon Steel Co.

Pending work includes:

DeWitt Clinton school, Glenlake and Fairfield Avenues, Chicago, 150 tons.

Edward Coles school, Philips and Eighty-fifth Streets, Chicago, 150 tons.

Municipal garage, Rockford, Ill., 100 tons.

Lincoln and Irving office and bank building, Chicago, 200 tons, general contract awarded to Federal Construction Co.

Waterworks, Madison, Wis., 400 tons, to Concrete Engineering Co.

Old Material.—For the first time since the current rise in prices started, an important consumer transaction has been consummated. A leading steel works has closed for about 25,000 tons of heavy melting at $16.50, delivered, an advance of 50c. over the ruling market of a week ago. With the exception of this purchase, activity is still confined largely to dealers, who continue to bid up prices on most grades. It is improbable, however, that those who participated in the aforementioned sale of heavy melting will have the same bullish interest in the market as heretofore. Railroad offerings include the New York Central, 8800 tons; the St. Paul, 4600 tons; the Santa Fe, 2500 tons; the Pullman Co., 1240 tons, and the Erie, a blind list.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton

Iron rails	$16.50 to $17.00
Cast iron car wheels	16.75 to 17.25
Relaying rails, 56 and 60 lb.	25.00 to 26.00
Relaying rails, 65 lb. and heavier	26.00 to 31.00
Forged steel car wheels	19.50 to 20.00
Railroad tires, charging box size	19.50 to 20.00
Railroad leaf springs, cut apart	19.50 to 20.00
Rails for rolling	18.00 to 18.50
Steel rails, less than 3 ft.	18.50 to 19.00
Heavy melting steel	16.00 to 16.50
Frogs, switches and guards cut apart	16.50 to 17.00
Shoveling steel	15.50 to 16.00
Drop forge flashings	11.50 to 12.00
Hydraulic compressed sheets	13.25 to 13.75
Axle turnings	13.50 to 14.00
Steel angle bars	18.00 to 18.50
Steel knuckles and couplers	19.00 to 19.50
Coil springs	20.00 to 20.50
Low phos. punchings	17.00 to 17.50
Machine shop turnings	9.00 to 9.50
Cast borings	10.75 to 11.25
Short shoveling turnings	10.75 to 11.25
Railroad malleable	18.50 to 19.00
Agricultural malleable	17.50 to 18.00

Per Net Ton

Iron angle and splice bars	16.50 to 17.00
Iron arch bars and transoms	20.00 to 20.50
Iron car axles	26.50 to 27.00
Steel car axles	18.00 to 18.50
No. 1 busheling	12.00 to 12.50
No. 2 busheling	9.00 to 9.50
Pipes and flues	11.00 to 11.50
No. 1 railroad wrought	14.50 to 15.00
No. 2 railroad wrought	14.25 to 14.75
No. 1 machinery cast	17.50 to 18.00
No. 1 railroad cast	16.00 to 16.50
No. 1 agricultural cast	16.00 to 16.50
Locomotive tires, smooth	16.00 to 16.50
Stove plate	14.25 to 14.75
Grate bars	14.25 to 14.75
Brake shoes	14.00 to 14.50

Philadelphia Foundrymen's June Meeting

The 347th meeting of the Philadelphia Foundrymen's Association will be held at the Manufacturers' Club, Philadelphia, Wednesday evening, June 10. It will be preceded by an informal dinner in the Walnut Room at 6 o'clock. This will be the last meeting until October. R. R. Clarke, superintendent of the alloys foundry of the General Electric Co., Erie, Pa., has been specially invited to be the principal speaker. He will take as his subject "The Foundry Physicist," and will discuss some of the difficult problems in foundry practice which he has solved.

New York

May Orders in Steel Show Increase—Good Pig Iron Inquiries

NEW YORK, June 2.—Neither in the character and extent of the buying nor in prices has the week developed any material change in the local market. Upward of 20,000 tons is involved in the purchases, most of them being for third quarter delivery. Foundry operations continue at a good rate in the districts immediately tributary to New York, and prospects for the summer are in the main encouraging. Quite a little is heard of transactions in Buffalo iron, malleable in particular, and the reports of recent weeks which have been of alternate firming and concessions, are repeated. Latest prices have shown a range of $18.50 to $19, Buffalo, in Eastern competition. More inquiries of 500 to 1000 ton size are reported. One from Bloomfield, N. J., is for 1000 tons of No. 2 plain and No. 2X, September to December delivery; another of 1000 tons for a Pennsylvania foundry of an interest which buys in New York. A Connecticut melter is in the market for 1000 to 1500 tons for early shipment. In another quarter two lots of special iron are pending—2500 and 1500 tons. Some inquiry for the last half has appeared, but few furnaces are selling that far ahead. The largest inquiry is for 5000 tons, for plants in other districts for which purchases are made in New York. Various reports are out of buying for radiator plants, but without definite confirmation. Generally on eastern Pennsylvania iron the range of prices continues at $20 to $21 at furnace.

We quote delivered in the New York district as follows, having added to furnace prices $2.52 freight from eastern Pennsylvania, $4.91 from Buffalo and $5.44 from Virginia:

East. Pa. No. 2, sil. 1.75 to 2.25	$22.52 to $23.02
East. Pa. No. 1X fdy., sil. 2.75 to 3.25	23.02 to 23.52
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	22.52 to 23.02
Buffalo, sil. 1.75 to 2.25	23.91 to 24.41
No. 2 Virginia, sil. 1.75 to 2.25	28.44

Ferroalloys.—The inquiry for 1200 tons of ferromanganese reported last week is understood to be still before the market, although it is stated that one month's supply, or 200 tons, has been bought. Other new business is made up of only carload and small lots. The spiegeleisen market is a little more active with fairly good sales reported for early and last half shipment. Prices for both alloys are unchanged with transactions made at full prices except in a few cases where competition was met.

Cast Iron Pipe.—The market on bell and spigot pipe is steadier than for some time with price concessions appearing only occasionally. The inquiry of the Department of Water Supply, Gas and Electricity, New York, is expected to call for 3000 to 4000 tons of pipe. Soil pipe is showing greater stability, although the market is recognized to have reached a level of 47½ per cent off list on 6-in. light and 57½ per cent off on heavy pipe.

We quote pressure pipe per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger, $50.60 to $51.60; 4-in. and 5-in., $55.60 to $56.60; 3-in., $65.60 to $66.60, with $5 additional for Class A and gas pipe. Discounts of both Northern and Southern makers of soil pipe, f.o.b. New York, are as follows: 6-in., 45¾ to 47½ per cent off list; heavy, 55¾ to 57½ per cent off list.

Finished Iron and Steel.—May steel business in the New York territory was unmistakably better than that of April. One company which makes a fairly wide variety of products states that its May sales in this territory were 28 per cent ahead of April. Another company whose products are mostly in the lighter forms of steel reports that its May tonnage in this district was fully 50 to 60 per cent above that of April. While these percentage gains may not be duplicated in every office, the general report is of better buying. As one district sales manager expressed it, orders are coming in with less pressure from the sellers. Another favorable indication is that there is less emphasis on prices. Sheet buyers alone do not yet seem to know what they should pay. On black sheets 3.15c. has been quoted, and in a few special instances business has been put on mill books at 3.10c. Blue annealed holds fairly well at 2.40c., but 4.25c. is more clearly recognized as the level to which galvanized sheets have dropped. Outside of sheets there is no marked price weakness, although a few sales of plates at 1.85c., Pittsburgh basis, are reported. In one instance a buyer got 18 tons of flange steel at a base price of 1.85c. While the larger producers of shapes are quoting 2c. to 2.10c., prices as low at 1.80c. to 1.90c. emanate from one or two smaller mills. Steel bars hold quite well at 2c., Pittsburgh.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.34c. to 2.44c.; plates, 2.24c. to 2.34c.; structural shapes, 2.24c. to 2.34c.

Warehouse Business.—Jobbers moved a fair volume out of stock last week. With some of them it was the best week in May. Only a few lines were reported sluggish, chief of which was welded pipe, on which a few small jobbers are offering concessions. Sheet prices are steadying although transactions are limited. Demand for spring steel has been active. In nonferrous lines bar and pig tin were advanced 2c. and antimony was marked up. For prices see page 1700. We quote boiler tubes per 100 ft. as follows:

Lapwelded steel tubes, 2-in., $17.33; seamless steel, 2-in., $20.24; charcoal iron, 2-in., $25; 4-in., $67.

Coke.—Buyers show no great interest in commitments for second half. Three sizable contracts for that period, placed during the last 10 days, are supposed to have been figured at $3. Output of beehive coke shows gradual gains. Though spot furnace coke is not in such great abundance as a few weeks ago, sales were reported at as low as $2.90. Foundry grades, of which considerable quantities are available, may be had from $3.50 to $4.50 per net ton at oven. By-product coke is still quoted at $10.41, Jersey City or Newark.

Old Material.—Under pressure of broker buying the market shows a distinct upward tendency in practically all grades, but buying by consumers is only slightly increased from the quiet of recent months. Price ideas among mills, however, are rising as more difficulty is encountered in securing any but the smallest tonnages of scrap at low prices, brokers being unwilling to commit themselves heavily at the current market. Heavy melting steel is being purchased by brokers at $15 to $15.50 per ton, delivered eastern Pennsylvania, which is also the range of prices on the contracts being filled. Machine shop turnings are active with brokers paying $13 to $13.50 per ton, delivered Phoenixville and Conshohocken, and one buyer quoted as offering $14 per ton, delivered on a $3.78 freight rate. Stove plate continues at $13 per ton, delivered West Mahwah, N. J., or Bridgeport, Conn. It is slightly advanced on deliveries to Phoenixville and Harrisburg, Pa., consumers' brokers paying $13.50 instead of $13 per ton on this delivery. Bundled skeleton is stronger and fairly active, with brokers paying $13 to as high as $14 per ton, delivered. Borings and turnings are being purchased at $12.50 per ton, delivered Birdsboro. Specification pipe is up another 50c. a ton under the active buying movement of brokers paying $15.50 to $16 per ton delivered to fulfill contracts.

Buying prices per gross ton New York follow:

Heavy melting steel, yard	$10.00 to $10.50
Heavy melting steel, railroad or equivalent	$11.75 to $12.25
Rails for rolling	12.25 to 12.75
Relaying rails, nominal	21.00 to 22.00
Steel car axles	17.50 to 18.00
Iron car axles	22.50 to 23.00
No. 1 railroad wrought	13.00 to 13.50
Forge fire	9.25 to 10.25
No. 1 yard wrought, long	12.00 to 12.50
Cast borings (steel mill)	8.50 to 9.00
Cast borings (chemical)	13.00 to 13.50
Machine shop turnings	8.50 to 9.00
Mixed borings and turnings	8.50 to 9.00
Iron and steel pipe (1 in. diam., not under 2 ft. long)	11.75 to 12.25
Stove plate	10.00 to 11.00
Locomotive grate bars	10.50 to 11.00
Malleable cast (railroad)	13.00 to 14.00
Cast iron car wheels	13.00 to 13.50
No. 1 heavy breakable cast	12.00 to 12.50

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast	$15.00 to $15.50
No. 1 heavy cast (columns, building material, etc.), cupola size	13.00 to 13.50
No. 2 cast (radiators, cast boilers, etc.)	12.00 to 12.50

Boston

Further Contraction in Pig Iron Sales—Prices Holding Well

BOSTON, June 2.—A further contraction in the volume of weekly pig iron sales is noticed here. Activity centers largely in India iron, whereas a fortnight ago Buffalo iron held the center of the stage. Recent sales of India iron include two or three round tonnages, 600 tons being the largest reported. Some of the foreign iron sold represents local storage holdings, but the bulk of it is to arrive later this month. India iron is selling on a delivered basis approximately equivalent to the domestic delivered price, which figures back to $22 to $22.50 on dock here, duty paid, and in some instances higher. Previous reports of $20 iron cannot be verified. Buffalo iron prices are the same as last week, and no change is noted in eastern Pennsylvania furnace price schedules, but so little of the latter iron is offered quotations for it are largely nominal. Most of the important pig iron consumers are reported as covered well into the third quarter, consequently no great activity in the market is expected during the summer.

We quote delivery prices on the basis of the latest sales as follows, having added $3.65 freight from eastern Pennsylvania, $4.91 from Buffalo, $5.92 from Virginia and $9.60 from Alabama:

East. Penn., sil. 1.75 to 2.25	$24.65
East. Penn., sil. 2.25 to 2.75	25.15
Buffalo, sil. 1.75 to 2.25	$23.91 to 24.91
Buffalo, sil. 2.25 to 2.75	23.91 to 25.40
Virginia, sil. 1.75 to 2.25	29.92
Virginia, sil. 2.25 to 2.75	30.42
Alabama, sil. 1.75 to 2.25	31.60
Alabama, sil. 2.25 to 2.75	32.10

Coke.—Both producers of by-product foundry coke in this territory have announced that $11.50 a ton delivered in New England will apply to June shipments against fuel contracts. That price is unchanged from last month. May contract specifications against contracts were somewhat smaller than April. The outlook for June is not assuring, according to coke makers, who maintain new business is not coming to foundries in sufficient volume to warrant heavier coke specifications.

Old Material.—Old material prices have not changed generally, but sentiment is decidedly more cheerful than it has been in months. The trade anticipates heavier shipments this month, but owners of scrap are holding back in the hope of securing higher prices. A Connecticut consumer has raised its bid for heavy melting steel from $10.50 to $11 on cars, shipping point, and $11 is being paid for a central Massachusetts plant's wants. Buying for eastern Pennsylvania mill use, however, is still on a basis of $10.50 on cars at shipping point. Other materials suitable for steel mill use are in better demand and relatively firmer in price than is heavy melting steel. New Jersey chemical boring users, following a period of inactivity, are asking rush shipments of contract material. The market for shafting is doing better, not so much because of any urgent demand as to the lack of supplies. New England foundry buying of machinery cast has fallen off.

The following prices are for gross ton lots delivered consuming points:

Textile cast	$19.50 to $20.50
No. 1 machinery cast	18.50 to 19.00
No. 2 machinery cast	15.50 to 16.00
Stove plates	13.00 to 13.50
Railroad malleable	19.00 to 20.00

The following prices are offered per gross ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	$10.50 to $11.00
No. 1 railroad wrought	13.00 to 13.50
No. 1 yard wrought	12.00 to 12.50
Wrought pipe (1-in. in diam., over 2 ft. long)	10.00 to 10.50
Machine shop turnings	7.50 to 8.00
Cast iron borings, chemical	10.00 to 10.50
Cast iron borings, rolling mill	8.25 to 9.00
Blast furnace borings and turnings	6.50 to 7.00
Forged scrap	9.00 to 9.50
Bundled skeleton, long	8.50 to 9.00
Bundled skeleton, short	9.00 to 9.50
Forged flashings	9.00 to 9.50
Shaftings	17.00 to 17.50
Street car axles	16.50 to 17.00
Rails for rerolling	11.50 to 12.00
Scrap rails	10.50 to 11.00

San Francisco

New Business Lags—Pasadena Buys Belgian Pipe

SAN FRANCISCO, May 30 (*By Air Mail*).—Outstanding among the developments of the past week was the placing of 1517 tons of cast iron pipe by Pasadena with the Grinnell Co. of the Pacific, for Belgian pipe at a delivered price of about $49. A local importer during the week received 2000 tons of English foundry iron, 4500 tons of English coke and 500 tons of fire-brick. The latter is quoted at $50 per 1000, duty paid, f.o.b. cars, San Francisco. Other imports included 150 tons of English ferromanganese, and a small tonnage of Swedish merchant bars. General interest is confined to small tonnages. Fresh inquiries are few and small. Prices are weak, especially in plates and sheets. A local interest is inquiring for 150 tons of track spikes and bolts, and an inquiry is in the market for 100 to 200 tons of 90-lb. rails.

Pig Iron.—Sales are small and scattered, and no price changes occured during the week. A local importer received 2000 tons of English foundry iron, silicon 2.50 to 3 per cent, most of which has been sold locally at $27, duty paid, f.o.b. cars. Part of this shipment has been sold in San Pedro, Cal., at the same price. Indian foundry iron is being offered freely in the Pacific Northwest and in the Los Angeles district, at prices ranging from $25.50 to $26.50, duty paid, f.o.b. cars.

*Utah basic	$27.25 to	$28.25
*Utah foundry, sil. 1.75 to 2.25	27.50 to	28.50
**Scotch foundry	28.00 to	30.00
**English foundry	27.00 to	28.00
**Belgian foundry		26.00
**Dutch foundry	25.25 to	26.50
**Indian foundry		26.50
**German foundry		26.50
*Birmingham, Ala., foundry, sil. 2.75 to 3.25	29.00 to	30.00

*Delivered San Francisco.
**Duty paid, f.o.b. cars San Francisco.

Shapes.—Prices seem to be settling at 2.45c., c.i.f. Coast ports, although rumors persist that better than 2.45c. is possible for large tonnages. Nothing under this figure has been named for a specific tonnage in the open market, however, and there are comparatively few large jobs pending. Importers quote foreign shapes at 1.80c., duty paid, c.i.f., for light material, and 2c. to 2.20c. for heavy material. The American Bridge Co. is low bidder for the Ross Island Bridge, Portland, Ore., calling for 5125 tons, with Booth & Pomeroy low bidder for the general contract. Fresh inquiries call for 525 tons.

Plates.—While minimum quotation remains at 2.40c., c.i.f Coast ports, it is understood that 2.35c. is not impossible. Some eastern mill representatives, however, still quote 2.45c. as a minimum. The Southern Pacific Co. is expected to call bids June 5 for 250 tons of plates, and a local interest is inquiring for 103 tons. The Pan-American Oil Co., Los Angeles, has placed 4000 tons with the United States Steel Products Co., for ten 100,000-bbl. tanks.

Cast Iron Pipe.—Lettings call for about 1617 tons, including 1517 tons awarded by Pasadena, Cal., to the Grinnell Co. of the Pacific for Belgian pipe. The American Cast Iron Pipe Co. was awarded 100 tons of 8-in. B, by Arcadia, Cal. Prices are unchanged at $52 to $53 base, in the San Francisco district.

Bars.—Prices are steady. Soft steel bars are firm at 2.55c.to 2.60c., base, local mill shipment, and reinforcing bars are quoted at 2.50c., c.i.f. Coast ports, for large tonnages. Reinforcing bars out of stock are: more than 250 tons, 3.25c., base, carload, 3.35c. base and 3.80c., base, l.c.l. Lindstrom & Feigenson, Portland, Ore., low bidders for concrete work on the Ross Island Bridge, Portland, will require 1320 tons of reinforcing bars. Among the larger lettings in reinforcing bars were the following:

Stockton City Hall, Stockton, Cal., 207 tons, to Truscon Steel Co.

Commercial Club, San Jose, Cal., 100 tons, to Truscon Steel Co.

Sun Maid Raisin Co. building, Fresno, Cal., 200 tons, to Kyle & Co.

Avenue 60 Bridge, across Arroyo Seco, Los Angeles, 142 tons, to unnamed jobber.

Anaheim Street Viaduct, at Wilmington, Los Angeles, 725 tons, to unnamed interest.

California State Highway Commission, Sacramento, two bridges, 110 tons, to unannounced firm.

Steel Pipe.—A New York oil company will take bids in New York in the near future for 4622 tons of 12-in. line pipe to be used in the Wyoming oil fields. A gas company in southern California has placed 1320 tons of 10-in. line pipe, and has closed bids for 110 tons of ½ to 1-in. galvanized pipe.

Sheets.—No business of any size has developed. Prices are weak, and 4.25c. is considered possible in galvanized sheets, Pittsburgh basis. Current quotations are as follows: Blue annealed sheets, 2.40c. to 2.50c.; black sheets, 3.30c. to 3.40c.; galvanized sheets, 4.25c. to 4.30c., all Pittsburgh basis.

Ferroalloys.—English ferromanganese (150 tons) was received by local importers during the week. The current price is $117.50, duty paid at incoming dock. Swedish ferrosilicon is quoted at $93, duty paid, incoming dock.

Warehouse Business.—Jobbers' estimates indicate that May sales ran ahead of April by a satisfactory margin, in spite of the fact that no large business was transacted. Prices are unchanged, and slightly stronger interest is developing.

Merchant bars, $3.30 base per 100 lb.; merchant bars, ⅜ in. and under, rounds, squares and flats, $3.80 base, per 100 lb.; soft steel bands, $4.15 base, per 100 lb.; angles, ⅛ in. and larger x 1½ in. to 2¾ in., inc., $3.30 base, per 100 lb.; channels and tees ¾ in. to 2¾ in. inc., $3.90 base, per 100 lb.; angles, beams and channels, 3 in. and larger, $3.15 base, per 100 lb.; tees, 3 in. and larger, $3.30 base, per 100 lb.; universal mill plates, ¼ in. and heavier, stock lengths, $3.30 base, per 100 lb.; spring steel, ¼ in. and thicker, $6.30 base, per 100 lb.; wire nails, $4 base, per 100 lb.; cement coated nails, $3 base, per 100 lb.; No. 10 blue annealed sheets, $4.20 per 100 lb.; No. 28 galvanized sheets, $6.25 per 100 lb.; No. 28 black sheets, $5.25 per 100 lb.

Coke.—About 4500 tons of English beehive and by-product coke, received during the past week by a local dealer, is mostly for sale here, although some of this shipment has been sold in Los Angeles, at $17, incoming dock, for beehive, and $14 for by-product. The recent quotation of $14.50 for English beehive was named for siftings and not for first quality coke.

English beehive, $14.50 to $17 at incoming dock, and English by-product, $12.50 to $14; Birmingham, Ala., by-product, $19 to $20 delivered; Wise County, Va., beehive, $22 delivered.

Buffalo

Firmer Pig Iron Market and About 10,000 Tons Sold

BUFFALO, June 2.—The total inquiry for the week was about 7500 tons, though the iron that was privately negotiated probably would bring the aggregate to much over this amount. A Cleveland district consumer sought 2000 tons of foundry and a western New York melter 1000 tons of malleable. One interest sold about 3000 tons in scattered small lots, but sales for the week were probably somewhere about 7500 to 10,000 tons in all. The price has hardened a trifle and the $18.50 basis is heard less frequently than two weeks ago. The $19 price is generally quoted and good business offered furnaces at lower than this figure has been refused. The furnaces are making an earnest effort to obtain the differentials, quoting $19.50 on 2.25 to 2.75 per cent silicon and $20 to $20.50 on No. 1 iron. Twelve district stacks are in blast.

We quote prices f.o.b. gross ton, Buffalo, as follows:

No. 2 plain, sil. 1.75 to 2.25	$19.00
No. 2X foundry, sil. 2.25 to 2.75	$19.00 to 19.50
No. 1 foundry, sil. 2.75 to 3.25	19.50 to 20.50
Malleable, sil. up to 2.25	19.00
Basic	19.00
Lake Superior charcoal	29.28

Finished Material.—The market shows little change. Bars and shapes are firm at 2.265c. Sheets show a little better demand with 3.565c. for black and 4.565c. for galvanized. Jobbers are specifying liberally against previous wire orders. Reinforcing bar demand is better with a 250-ton Buffalo school among the inquiries. Road mesh orders have been about 300 tons for the week. Demand for warehouse material is fair.

Warehouse prices are being quoted as follows: Steel bars, 3.25c.; steel shapes, 3.35c.; steel plates, 3.35c.; No. 10 blue annealed sheets, 4.05c.; No. 28 black sheets, 4.75c.; No. 28 galvanized, 5.80c.; cold rolled shapes, 4.65c.; cold rolled rounds, 4.20c.; wire nails, 4.00c.; black wire, 4.05c.

Old Material.—A better feeling exists, though there has not been a great deal of actual buying. Some mills have tried to buy at present prices but have not been able to collect much material. Generally speaking mills are not anxious to cover at this time, and dealers do not look for any radical advance in prices. Dealers have been encouraged throughout the week by inquiries from outside the district for heavy melting steel, compressed sheets and turnings and borings, but the prices offered by the outsiders are not sufficiently high to draw much material out of the district. One of the larger mills here is offering $15 for heavy melting steel, but would probably have to pay $16 to $17 to obtain a tonnage. There has been some movement among the specialties.

We quote prices f.o.b. gross ton, Buffalo, as follows:

Heavy melting steel	$16.00 to $16.50
Low phosphorus	18.50 to 19.50
No. 1 railroad wrought	14.00 to 14.50
Car wheels	15.00 to 16.00
Machine shop turnings	10.00 to 10.50
Cast iron borings	10.00 to 10.50
No. 1 busheling	15.50 to 16.00
Stove plate	14.25 to 14.50
Grate bars	12.50 to 13.00
Bundled sheets	11.50 to 12.00
Hydraulic compressed	14.50 to 15.50
No. 1 machinery cast	16.50 to 17.00
Railroad malleable	17.00 to 17.50
No. 1 cast scrap	16.50 to 17.00
Iron axles	26.00 to 27.00
Steel axles	17.00 to 17.50

St. Louis

Old Material Advances First Time Since March 1

ST. LOUIS, June 2.—Once more the pig iron market is quiet, sales of the St. Louis Coke & Iron Co. for the week totaling only about 1800 tons to St. Louis melters in lots of a carload up to 600 tons, all for third-quarter delivery. The only inquiry of consequence before the market is for 3500 tons for a Missouri melter. The Central Foundry Co., Vincennes, Ind., bought 2000 tons of foundry iron for third-quarter delivery, placing it, it is believed, in Chicago. While Northern iron is being quoted nominally at $20.50, Chicago, it is understood that that price is being shaded by several dollars a ton in this territory. A Tennessee maker is quoting $18, Birmingham, but the Alabama furnaces are still holding at $21 to $22, Birmingham, no sales being made in this market at that price.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices $2.16 freight from Chicago, $5.17 from Birmingham, all rail, and 81c. average switching charge from Granite City.

Northern fdy., sil. 1.75 to 2.25	$23.16
Northern malleable, sil. 1.75 to 2.25	23.16
Basic	23.16
Alabama fdy., sil. 1.75 to 2.25 (rail)	$23.17 to 27.17
Granite City iron, sil. 1.75 to 2.25	21.31 to 21.81

Coke.—Foundry coke is reported moving in larger quantities. There is an increase in shipments of domestic coke to dealers, who have been sending specifications before the seasonal price advance on June 1.

Finished Iron and Steel.—It is understood that the Missouri Pacific Railroad order for 630,000 tie plates is about to be placed, and that they will be manufactured by a St. Louis steel maker for the patentees. Mills, holding closer to quotations, are rejecting orders that would have been accepted a few weeks ago, a position that, it is believed, will have a good effect on the minds of manufacturers of steel products. The only new rein-

forced concrete job pending is an elevator for the Chicago & Alton Railroad at Kansas City, which will require 400 tons of bars.

For stock out of warehouse we quote: Soft steel bars, 3.15c. per lb.; iron bars, 3.15c.; structural shapes, 3.25c.; tank plates, 3.45c.; No. 10 blue annealed sheets, 3.90c.; No. 28 black sheets, cold rolled, one pass, 4.80c.; galvanized sheets, No. 28, 5.80c.; blank corrugated sheets, 4.95c.; galvanized, 5.95c.; cold-rolled rounds, shafting and screw stock, 3.95c.; structural rivets, 3.65c.; boiler rivets, 3.85c.; tank rivets, $\frac{7}{8}$ in. diameter and smaller, 70 per cent off list; machine bolts, 55 per cent; carriage bolts, 50 per cent; lag screws, 60 per cent; hot pressed nuts, squares, $3.50; hexagons, blank or tapped, $4 off list.

Old Material.—For the first time since March 1, an advance is reported in the market for old material, the increases ranging from 50c. to $1.50 a ton. The advances are based on reports of strengthening markets in the East and the belief that consumers in this district will be in the market soon for good sized tonnages. Some consumers are said to be willing to buy now, but dealers are said to be holding out for higher prices. New railroad lists issued during the week follow: St. Louis & San Francisco, 500 tons; Mobile & Ohio, 1000 tons; Union Pacific, 2000 tons; Wabash, 2200 tons; Pennsylvania System, 3600 tons and Big Four Lines, 600 tons.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton

Iron rails	$12.00 to $12.50
Rails for rolling	16.00 to 16.50
Steel rails less than 3 ft.	17.50 to 18.00
Relaying rails, 60 lb. and under	24.00 to 25.00
Relaying rails, 70 lb. and over	30.00 to 30.50
Cast iron car wheels	16.00 to 16.50
Heavy melting steel	14.50 to 15.00
Heavy shoveling steel	14.50 to 15.00
Frogs, switches and guards cut apart	15.50 to 16.00
Railroad springs	18.00 to 18.50
Heavy axles and tire turnings	11.00 to 11.50
No. 1 locomotive tires	18.00 to 18.50

Per Net Ton

Steel angle bars	13.75 to 14.25
Steel car axles	17.00 to 17.50
Iron car axles	24.00 to 24.50
Wrought iron bars and transoms	18.00 to 18.50
No. 1 railroad wrought	13.25 to 13.75
No. 2 railroad wrought	12.50 to 13.00
Cast iron borings	10.00 to 10.50
No. 1 busheling	11.00 to 11.50
No. 1 railroad cast	16.00 to 16.50
No. 1 machinery cast	17.50 to 18.00
Railroad malleable	13.75 to 14.25
Machine shop turnings	8.00 to 8.50
Champion bundled sheets	8.50 to 9.00

Cincinnati

Sustained Activity in Pig Iron—Firmer Scrap Indicated

CINCINNATI, June 2.—Local dealers sold approximately 12,000 tons of pig iron during the past week. Sales activities continue to be brisk, although a slight falling off in both sales and inquiries compared with the previous week has been noted. Consumers in many cases are covering their requirements for the last half, but furnaces are trying to hold down sales to third quarter shipments in view of the present low prices. The price of $19, Ironton, on southern Ohio iron has remained unchanged for two weeks and many dealers believe that quotations will not go under this figure. Tennessee iron is obtainable at $17.50, Birmingham, on attractive tonnages, but the local market for Southern iron is sluggish. Alabama furnaces have not wavered from their schedule of $20 to $22, Birmingham, which practically eliminates them from local competition. Silvery iron is fairly firm at $24, furnace, for 6 per cent, although the differential between the grades of silvery is not being maintained. The Lavelle foundry, Anderson, Ind., is reported to have closed for the major portion of 5000 tons of Northern iron for which it inquired last week. This is for shipment to the Anderson and Indianapolis plants. The Peerless Foundry, Cincinnati, has bought 2400 tons of Northern foundry iron. Other sales include 600 tons of Tennessee iron to a Louisville melter; 500 tons of silvery to the Cadillac Motor Car Co., Detroit; 500 tons of low phosphorus iron to Dayton, Ohio; 300 tons of Northern iron to Galva, Ill.; 300 tons of low phosphorus to the Toledo Steel Castings Co., Toledo; 200 tons of Northern foundry to Anderson, Ind.; 150 tons of Tennessee iron to a central Ohio melter; 100 tons of Northern foundry to Indianapolis; 100 tons of Bessemer iron to Detroit; 100 tons of malleable to Cambridge City, Ind.; and 100 tons of spiegeleisen to Fort Wayne, Ind. Among the inquiries received are: Favorite Stove Co., Piqua, Ohio, 600 tons of Northern foundry; Detroit Steel Castings Co., Detroit, 500 tons of Bessemer iron; Packard Motor Car Co., Detroit, 500 tons of silvery; Muncie, Ind., melter, 500 tons of Northern foundry; New Idea Spreader Co., Coldwater, Ohio, 250 to 500 tons of foundry; P. H. & F. M. Roots Co., Connersville, Ind., 500 tons of foundry; Cambridge City, Ind., melter, 250 tons of malleable; Anderson Engine Co., Anderson, Ind., 100 tons of foundry; and the Anchor Stove Co., New Albany, Ind., 100 tons of Southern iron.

Based on freight rates of $4.05 from Birmingham and $2.27 from Ironton we quote f.o.b. Cincinnati:

Alabama fdy., sil. 1.75 to 2.25 (base)	$24.05 to $25.05
Alabama fdy., sil. 2.25 to 2.75	24.55 to 25.55
Tennessee fdy., sil. 1.75 to 2.25	21.55
Southern Ohio silvery, 8 per cent	28.77
Southern Ohio fdy., sil. 1.75 to 2.25	21.27
Southern Ohio, basic (nominal)	22.27
Southern Ohio, malleable	22.27

Sheets.—A fair volume of business was booked during the past week, all sales limited to small tonnages. A better tone prevails in the local market, and sellers are optimistic about the outlook for June. Sales during May were larger than during April, with most companies. Mills are not inclined to take much third-quarter business at present quotations, preferring to confine their sales to delivery within 4 to 6 weeks. The Portsmouth, Ohio, works of the Wheeling Steel Corporation, which has been operating 17 sheet mills, is reported to have added 6 mills to its present operations. Other producers in Cincinnati territory are running at a fair rate, depending upon orders coming in from week to week to maintain production schedules. Prices remain extremely soft, due to low quotations of independent mills. However, there has been no change in the past week and it is not likely that consumers will be able to purchase sheets below current price levels. Black sheets are being sold at 3.30c. to 3.40c., Pittsburgh, although some business has been booked at lower figures. Galvanized sheets are quoted at 4.30c. to 4.40c., Pittsburgh, but 4.25c. has been done in some instances. Blue annealed ranges from 2.30c. to 2.40c., Pittsburgh, while automobile sheets are offered at 4.25c. to 4.40c., Pittsburgh.

Reinforcing Bars.—The market is quiet locally. The Pollak Steel Co. will supply 275 tons for the American Products Co. building, Cincinnati. Several small awards have been made in the past week. No projects involving attractive tonnages are pending, but it is expected that several good jobs, now in their initial stages, will be up for bids shortly. New billets are quoted at 2c. to 2.10c., mill, with rail steel bringing 1.90c. to 1.95c., mill.

Wire Products.—The volume of sales remains about the same as for several weeks. Some jobbers, having considerable stock on hand, are disposing of it slowly and will not be in the market for several months. However, sellers report a number of jobbers carrying little stock, and an improvement in retail circles will be immediately reflected in the resumption of buying by the jobbing trade. Competition between mills in the Pittsburgh and Ironton districts has brought out a price on nails of 2.70c., Ironton, by the latter interests, which also are offering plain wire at 2.45c., Ironton. Pittsburgh producers are asking 2.75c. for nails and 2.50c. for plain wire, but are meeting the Ironton freight rate, making the price delivered in Cincinnati 2.89c. for the former and 2.64c. for the latter.

Bars, Shapes and Plates.—Increased sales are reported by several large producers. Structural shapes and plates are in fair demand, although building projects now pending are not numerous. Fabricators state that awards have been confined to small tonnages booked at extremely low prices. Sellers are encouraged

at the improvement in the sale of bars. There is a better feeling throughout the market and prices are well stabilized at 2c. to 2.10c., Pittsburgh. Desirable business is moving at 2c., with sellers holding more firmly to 2.10c. on carload sales. No big tonnages have been placed locally, but the volume of small orders is fairly good. In the majority of cases consumers are calling for quick delivery.

Warehouse Business.—Jobbers noted a slight improvement in business during the past week. Several state that May produced larger sales than April, but the larger firms report that orders in the past month dropped 10 to 15 per cent from the previous month. The demand for structural steel has decreased somewhat. In fact, no item is showing strength. Weakness in sheets has brought out price shading by several jobbers. Wire and nails are moving slowly. Cold-rolled products are rather quiet. Prices in general are fairly firm.

Cincinnati jobbers quote: Iron and steel bars, 3.30c.; reinforcing bars, 3.30c.; hoops, 4.35c.; bands, 3.95c.; shapes, 3.40c.; plates, 3.40c.; cold-rolled squares, 4.55c.; open-hearth spring steel, 4.75c. to 5.75c.; No. 10 blue annealed sheets, 3.90c.; No. 28 black sheets, 4.40c.; No. 28 galvanized sheets, 5.75c.; No. 9 annealed wire, $3.05 per 100 lb.; common wire nails, $3.15 per keg base; cement coated nails, $2.65 per keg; chain, $7.55 per 100 lb. base; large round head rivets, $3.75 base; small rivets, 65 per cent off list. Boiler tubes, prices net per 100 ft., lap welded steel tubes, 2-in., $18; 4-in., $38; seamless, 2-in., $19; 4-in., $39.

Coke.—Sales of foundry coke during May have been fairly good, but furnace grades have been moving slowly. Specifications now coming in are encouraging. Prices have not changed, although there has been a disposition on the part of the several sellers to shade quotations slightly.

Old Material.—Little improvement is evident in sales of scrap iron. The tone of the market, however, is better and more inquiries have been made by mills. Consumers are not inclined to buy except at low prices. The Cleveland, Cincinnati, Chicago and St. Louis Railroad is closing this week on a small list. Quotations are stronger than they were.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

	Per Gross Ton	
Heavy melting steel	$13.50 to	$14.00
Scrap rails for melting	13.50 to	14.00
Short rails	17.50 to	18.00
Relaying rails	28.00 to	28.50
Rails for rolling	15.00 to	15.50
Old car wheels	14.00 to	14.50
No. 1 locomotive tires	17.00 to	17.50
Railroad malleable	16.00 to	16.50
Agricultural malleable	15.00 to	15.50
Loose sheet clippings	10.00 to	10.50
Champion bundled sheets	12.00 to	12.50
Per Net Ton		
Cast iron borings	8.50 to	9.00
Machine shop turnings	7.50 to	8.00
No. 1 machinery cast	17.50 to	18.00
No. 1 railroad cast	15.50 to	16.00
Iron axles	22.00 to	22.50
No. 1 railroad wrought	11.00 to	11.50
Pipes and flues	8.50 to	9.50
No. 1 busheling	10.00 to	10.50
Mixed busheling	9.00 to	9.50
Burnt cast	9.50 to	10.00
Stove plate	10.00 to	10.50
Brake shoes	11.00 to	11.50

Birmingham

Active Inquiries Bring Better Feeling—Some Iron to Middle-West

BIRMINGHAM, June 1.—A few sales in small lots for delivery during the third quarter of the year, and some active inquiries, have brought about a better feeling in the Southern pig iron market. There is strong hope that in the near future good buying will follow. Furnace interests are asking $20 to $21 per ton base for No. 2 foundry. Soil pipe manufacturers have been competing for business and prices are very low. Pressure-pipe makers have been getting in a number of lettings but maintaining prices. Machine shops and foundries have taken some contracts. On all sides, consumers of iron are asking for concessions and it is intimated that a deflection in prices will bring about healthy buying. Some few sales of iron have been made for shipments to the Middle West, outside of home territory. Stove foundries, inquiring for iron in lots up to 750 tons, have purchased so far in lots between 150 and 200 tons. Much iron has accumulated in the Birmingham district. Despite the better feeling, the blowing out of another blast furnace is looked for this week and possibly another, the fourth since May 1. At the close of last week 14 furnaces were blowing on foundry and 10 on basic iron. Tennessee furnaces are still reported selling on an $18.50 to $19 Birmingham base, but there is a freight differential and the iron is not the same as that of Birmingham.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry, 1.75 to 2.25 sil	$20.00 to $21.00
No. 1 foundry, 2.25 to 2.75 sil	20.50
Basic	20.00
Charcoal, warm blast	30.00

Finished Steel.—Production of finished steel is showing a little increase as the new open-hearth furnaces of the Tennessee Coal, Iron & Railroad Co. at Fairfield get down to steady operation. Operation of plants of the Steel Corporation in this district is near cacacity. The Gulf States Steel Co. is operating three open-hearth furnaces out of six. An improvement is noted in demand for various shapes of steel and shipments are in excess of production, a little steel being taken from warehouses. Steel bars are quoted Birmingham 2.15 to 2.25c.

Cast Iron Pipe.—Pressure-pipe production continues steady, quotations are given at $40 per ton for 6-in. and over and shipments are equal to make. Lettings are satisfactory and all intimation is that there will be no lagging during the remainder of the year. Soil pipe trade is still sluggish, with keen competition among the producers. Further concession by producers is eliminating all profits, it is asserted by some manufacturers. Present discount is 52.5 per cent off list.

Coke.—Independent coke producers are marketing their product steadily with $5 per ton, foundry coke, average. Two companies are producing with beehive ovens and there is fairly good demand for this product. Progress is being made by the Koppers Co. on the 57-ton by-product plant for the Republic Iron & Steel Co. here. Barrett Co., tar products concern, is erecting some ovens at its plant in Fairfield for the carbonization of pitch. Heretofore this company has been using beehive ovens of the Gulf States Steel Co. at Virginia Mines.

Old Material.—Scrap in this territory is holding up wonderfully well, everything considered, though no changes in quotations have taken place. Dealers are not seeking long contracts. Considerable old material is moving about. Melters of old material are looking forward to a cut in pig iron prices. As stated before, old material dealers say that pig iron prices do not affect the scrap market.

We quote per gross ton, f.o.b. Birmingham, district yards, as follows:

Cast iron borings, chemical	$15.00 to $16.00
Heavy melting steel	13.00 to 14.00
Railroad wrought	12.00 to 13.00
Steel axles	17.00 to 18.00
Iron axles	18.00 to 19.00
Steel rails	13.00 to 14.00
No. 1 cast	16.50 to 17.00
Tramcar wheels	16.50 to 17.00
Car wheels	15.00 to 16.00
Stove plate	13.00 to 14.00
Machine shop turnings	7.00 to 8.00
Cast iron borings	8.00 to 9.00
Rails for rolling	16.50 to 17.00

The Gulf States Steel Co. will proceed with the construction of a new bar mill at its plant at Gadsden, Ala., to be housed in 80 and 150-ft. buildings 700 ft. long and to be equipped for the production of round and flat bars, with a rated output of 10,000 tons per month. Most of the equipment will be electrically-operated.

The iron foundry at 548 Poland Avenue of the Youngstown Foundry & Machine Co., Youngstown, was destroyed by fire Friday evening, May 29, with a loss estimated at upward of $250,000. There will be some salvage value to the equipment, states President W. J. Wallis.

Cleveland

Further Buying in Pig Iron—Weakness in Steel Still a Fact

CLEVELAND, June 2.—The volume of new business in finished steel is moderate and shows little change, although some of the mills report a slight increase in the size of the orders. However, buying is almost entirely for early requirements. Prices on steel bars, plates and structural material have settled closer to the 2c. basis. The market on steel bars and shapes appears very firm at that price and a round lot inquiry during the week that also included plates failed to bring out a lower quotation. While a few orders for steel bars are still being taken at 2.10c., some mills are quoting 2c. for small lots. There are fewer efforts to force the market down than recently, as many buyers appear satisfied with a 2c. price. There is still some shading of plates to 1.90c. but 2c. is being well maintained. However, prices above 2c. are hard to obtain and one Ohio mill that has been on a 2.10c. basis has reduced its price to 2c. Further weakness has developed in the sheet market. It has spread to auto body sheets, which have been held firmly for several months. Cold rolled strip steel has declined sharply. While at least some of the automobile plants expect to continue to operate at capacity through June, sheet and strip makers realize that the demand from this source is likely to fall off considerably during the next quarter. Little new building work is coming out in this territory and nothing has developed in several Lake boat inquiries that are pending. Several projects have come out requiring large tonnages of sheet steel pilings. The west side filtration plant, Cleveland, will take 1500 tons, dock work for the Bourne-Fuller Co. 400 tons, and Ohio River work 2000 tons. The Gulf Refining Co. has placed 40 oil stills with the Henry Vogt Machine Co., Louisville, requiring 1200 tons of plates.

Pig Iron.—Buying continues in fairly heavy volume, although sales the past week fell off considerably as compared with the previous week. Cleveland interests sold during the week 65,000 tons, making a total of 350,000 tons for the month of May. Some of the furnaces report an increase in the number of sales, but the average tonnage was not so large as during the previous week, few orders being for over 1000 tons. A good volume of inquiry is still coming out. One seller has scattered inquiries for about 25,000 tons. Among the larger sales during the week was a 4000 to 5000-ton lot purchased by the General Electric Co. The Westinghouse Electric & Mfg. Co. is inquiring for 3400 tons of foundry iron for its Cleveland plant for the third quarter. Among other inquiries is one from Indiana for 3000 tons. In the Valley district $18.50 has become the more common price on foundry and malleable iron, and to meet this competition the Cleveland price for local delivery has been reduced 50c. a ton to $19.50 by one producer. Some of the Lake furnaces continue to hold to the $19 minimum. We note the sale of several lots of Ohio silvery iron at $26.50, or $1 a ton below the regular schedule. Low phosphorus iron is unchanged at $28.50, Valley furnace. Two lots, one of 600 tons and the other of 300 tons, were sold in this territory during the week at that price.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a $3.02 freight rate from Jackson and $6 from Birmingham:

Basic, Valley furnace	$18.25 to $18.50
N'th'n No. 2 fdy., sil. 1.75 to 2.25	20.00 to 20.50
Southern fdy., sil. 1.75 to 2.25	24.50 to 26.01
Malleable	20.00 to 20.50
Ohio silvery, 8 per cent	29.02
Standard low phos., Valley furnace	28.50

Iron Ore.—The inquiry from a Pittsburgh district consumer for 50,000 to 100,000 tons of Lake Superior iron ore is still pending and there is keen competition among sellers for this business. This inquiry is understood to have brought out quotations 45c. a ton below the regular schedule, although some of the leading producers are not inclined to shade regular prices.

Fluorspar.—Prices have declined $1 a ton to $17.50 for 85 and 5 per cent material for round lot business, having been forced down by the competition of foreign fluorspar, imports of which have increased 11 per cent this year. However, carlot sales are being made at $19. Some contracts are being taken for the last half.

Semi-finished Steel.—Sales of sheet bars have been very light since the recent price reduction, which is being applied to contract tonnage. There is no new inquiry and little buying is expected before late in the month when some consumers will cover for their July requirements.

Sheets.—Further weakness has developed in the sheet market and prices are $1 to $2 a ton lower than a week ago. A round lot of blue annealed sheets for Cleveland delivery brought out a quotation equivalent to 2.20c., Pittsburgh. Car lots can be bought at 3.15c., Pittsburgh, for black, 2.30c. for blue annealed and 4.25c. for galvanized. Auto body sheets have declined $2 a ton to 4.30c. at which Detroit automobile plants have placed business. Most Ohio mills have gotten away from the Pittsburgh basing point and are quoting either a Valley or mill base or a delivered price.

Strip Steel.—The cold rolled strip market is weak and some business has been taken at 3.50c. or $5 a ton below the recent price. Hot rolled strip steel is unchanged at 2.20c. for wide material and 2.40c. for narrow strip. Hoops and bands are still quoted at the latter price but the market shows signs of weakness.

Bolts, Nuts and Rivets.—Specifications for bolts and nuts continue fairly good, but there is not much new buying. The market is rather firm at regular prices and the second quarter discounts will probably prevail during the third quarter. Some inquiry has come out for rivets for the third quarter and the leading local manufacturer expects to adhere to its present 2.60c. price for large rivets for that delivery. However, the market lacks strength and this price is being shaded $1 to $2 a ton.

Old Material.—The market is firm, with price advances of 25c. to 75c. a ton. Mills are doing some quiet buying. The supply is not in excess of the demand and there is rather keen competition among dealers for material to fill old orders. Sales for delivery to local mills were made during the week at $14 for borings and turnings and $17 for heavy melting steel delivered. A Cleveland consumer paid $14.25, delivered, for machine shop turnings offered by a Detroit automobile company, or equivalent to $11.22 Detroit. Sales of the same grade were made in Detroit to dealers at $10.90. Borings brought about $11.50, Detroit.

We quote dealers' prices f.o.b. Cleveland per gross ton:

Heavy melting steel	$16.25 to $16.50
Rails for rolling	16.50 to 17.00
Rail under 3 ft	19.25 to 19.50
Low phosphorus melting	18.75 to 19.00
Cast iron borings	13.50 to 13.60
Machine shop turnings	13.25 to 13.50
Mixed borings and short turnings	13.50 to 13.60
Compressed sheet steel	14.00 to 14.25
Railroad wrought	12.75 to 13.25
Railroad malleable	18.00 to 18.25
Light bundled sheet stampings	11.75 to 12.00
Steel axle turnings	15.00 to 15.50
No. 1 cast	17.75 to 18.00
No. 1 busheling	13.25 to 13.50
Drop forge flashings	11.75 to 12.00
Railroad grate bars	13.25 to 13.50
Stove plate	13.25 to 13.50
Pipes and flues	9.25 to 9.75

Illinois Central Closing on $200,000 Tool List

CHICAGO, June 2.—The Illinois Central Railroad is placing orders today for machine tools and it is estimated that its purchases this week will aggregate $200,000.

The Pennsylvania Engineering Works, New Castle, Pa., following reorganization and refinancing, has resumed the manufacture of large steel ladles, ingot and open-hearth charging cars, metal mixers, open-hearth furnaces and converters.

Philadelphia

Steel Orders Gain—Large Scale Pig Iron Buying—Scrap Prices Higher

PHILADELPHIA, June 2.—The general report from steel companies is of a gain in the volume of business. May was better than April and the latter half of May showed a gain over the first half. While the gain in some lines has been fairly substantial, it is not expected that there will be any increase in operating schedules, as steel companies do not know whether to expect a continuance of the May rate of buying in view of the nearness of the summer months. In some instances buyers have been obliged to accept delivery dates not quite so satisfactory as could have been obtained a few weeks ago. Some of the mills are now less inclined to alter rolling schedules to suit the convenience of buyers wanting quick shipments.

Pig iron buying has included two 5000-ton lots of low phosphorus iron, some basic and a fairly good sprinkling of 1000-ton and 2000-ton foundry iron orders. Prices have not changed, but are slightly firmer. A general advance in some prices has accompanied more active consumer buying. Yard dealers have become bullish on prices and are holding their stocks for further advances.

Pig Iron.—The week has been marked by fairly substantial sales of pig iron. A Burnham, Pa., consumer bought about 5000 tons of low phosphorus iron and a New England wire plant also took about 5000 tons of the same grade. A 3000-ton transaction in basic iron, mentioned a week ago as about to be consummated, was put through at $21.50, delivered. There were also several sales of 1000-ton and 2000-ton lots of foundry iron, and a considerably larger transaction in pipe iron. All sales of foundry iron have been on the basis of $20 to $21, furnace. The lower price is being quoted less often than was the case a week or two ago, but it is still available on the more desirable tonnages. However, at least two furnaces which were openly quoting $20 about two weeks ago are now insisting on a minimum of $20.50, base. Two other sellers, however, will go to $20 if required to do so to get the business. The Standish furnace will blow in on low phosphorus iron about July 1.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rate varying from 76c. to $1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	$20.76 to $21.63
East. Pa. No. 2X, 2.25 to 2.75 sil.	21.26 to 22.13
East. Pa. No. 1X	21.76 to 22.63
Virginia No. 2 plain, 1.75 to 2.25 sil.	28.67 to 29.17
Virginia No. 2X, 2.25 to 2.75 sil.	29.17 to 29.67
Basic delivery eastern Pa.	21.50 to 22.00
Gray forge	21.50 to 22.00
Malleable	21.50 to 22.50
Standard low phos. (f.o.b. furnace)	24.00 to 25.00
Copper bearing low phos. (f.o.b. furnace)	25.00 to 26.00

Ferroalloys.—Ferromanganese remains at $115, furnace or seaboard. Demand is limited to carload lots.

Billets.—While not openly quoted by Eastern mills, $35, Pittsburgh, is to be had on billets of rerolling quality, with $5 extra for forging quality. Business is confined to small lots.

Plates.—The improved demand for plates noted in reports of the last two or three weeks has been fairly well maintained. Among plate mills of this district there is a variation in the rate of operation, depending upon capacity, but the average is perhaps not so far from 50 per cent. One of the smaller mills ran at 75 per cent last month, but this is exceptional. In this district no concession from 1.90c., Pittsburgh, is reported. The Newport News Shipbuilding & Dry Dock Co., Newport News, Va., will build two steel tugs for the Pennsylvania Railroad.

Structural Material.—The market both on plain material and fabricated material is still ragged. Prices quoted range from 1.80c. to 2.10c., Pittsburgh, but of course the lower figure is quite exceptional. However, quotations of 1.90c. are not uncommon, though most of the mills aim to get 2c. or 2.10c., Pittsburgh, the latter price applying mainly on small lots. A fair amount of fabricated work in this vicinity is being closed.

Sheets.—Despite efforts of some of the larger producers of sheets to "peg" prices, there is still marked weakness in all grades. Blue annealed has appeared to be firm at 2.40c., but sellers have received intimations from buyers that they have had lower quotations from some source. Black sheets are not above 3.20c., and lower quotations have appeared. Galvanized sheets range from 4.25c. to 4.30c., Pittsburgh.

Bars.—A test of the steel bar market came with the letting of 1200 tons of reinforcing steel for the municipal stadium to be built at League Island. It is stated that nothing less than 2c., Pittsburgh, was quoted, and the business was divided up on this basis. The ordinary run of bar orders is fairly good. In fact there has been a slight gain in tonnage. Bar iron is in light demand, with the price unchanged at 2.22c., Philadelphia.

Warehouse Business.—Some of the local jobbers are quoting prices considerably under the nominal prices given below. For example, while the larger jobbers are trying to maintain a price of 3.10c. on bars and small shapes, some sellers have quoted as low as 2.90c. Similar concessions are offered on other products. For local delivery we name nominal quotations as follows:

Soft steel bars and small shapes, 3.10c.; iron bars (except bands), 3.10c.; round edge iron, 3.50c.; round edge steel, iron finished, 1½ x ½ in., 3.50c.; round edge steel planished, 4.30c.; tank steel plates, ¼ in. and heavier, 3.10c.; tank steel plates, ⅜ in., 3.25c.; blue annealed steel sheets, No. 10 gage, 3.70c.; black sheets, No. 28 gage, 4.70c.; galvanized sheets, No. 28 gage, 5.85c.; square, twisted and deformed steel bars, 2.85c.; structural shapes, 3c. to 3.10c.; diamond pattern plates, ¼-in., 5.30c.; ⅜-in., 5.50c.; spring steel, 5c.; rounds and hexagons, cold-rolled steel, 4.15c.; squares and flats, cold-rolled steel, 4.65c.; steel hoops, 4.20c. base; steel bands, No. 12 gage to ⅛ in., inclusive, 3.95c.; rails, 3.20c.; tool steel, 8.50c.; Norway iron, 6.50c.

Imports.—Pig iron imports at Philadelphia last week were smaller, only 950 tons having come in, of which 925 was from Germany and 25 from Sweden. Other imports were: Iron blooms from Sweden, 50 tons; muck bar from Sweden, 200 tons; bar iron from Sweden, 60 tons; manganese ore from India, 7200 tons. Small lots of bright round steel wire, galvanized steel strips and hoop steel came from England.

Old Material.—A better consumer demand has brought higher prices on nearly all grades of old material. An Eastern steel company bought two 10,000-ton lots of heavy melting steel, paying $15 in one instance and $15.50 in the other. Another steel company paid $16 for several thousand tons. Brokers who were offering $14.50 for delivery at Bethlehem, Pa., have been obliged to increase their offers to $15, and this is now the minimum on any lots of steel scrap. Yard dealers are very bullish and not at all anxious to sell even at $15. For machine shop turnings for open-hearth furnace use one steel company has paid $13 and another $13.50, but the latter requires short shoveling grade. No. 1 cast scrap is firmer at $17.50 to $18.

We quote for delivery consuming points in this district as follows:

No. 1 heavy melting steel	$15.00 to $16.00
Scrap rails	15.00 to 16.00
Steel rails for rolling	17.00 to 17.50
No. 1 low phos. heavy 0.04 and under	20.00 to 21.00
Couplers and knuckles	19.00 to 20.00
Rolled steel wheels	19.00 to 20.00
Cast-iron car wheels	17.00 to 17.50
No. 1 railroad wrought	17.50 to 18.00
No. 1 yard wrought	16.50 to 17.00
No. 1 forge fire	14.00 to 14.50
Bundled sheets (for steel works)	13.00 to 13.50
Mixed borings and turnings (for blast furnace use)	12.00 to 12.50
Machine shop turnings (for steel works use)	13.00 to 13.50
Machine shop turnings (for rolling mill use)	13.00
Heavy axle turnings (or equivalent)	14.00 to 15.00
Cast borings (for steel works and rolling mill)	13.00 to 13.50
Cast borings (for chemical plants)	15.00 to 15.50
No. 1 cast	17.50 to 18.00
Heavy breakable cast (for steel plants)	16.00 to 16.50
Railroad grate bars	13.00 to 13.50
Stove plate (for steel plant use)	13.00 to 13.50
Wrought iron and soft steel pipes and tubes (new specifications)	15.50 to 16.00
Shafting	21.00 to 22.00
Steel axles	21.50 to 22.50

Defines Allowable Association Work

Supreme Court Holds as Not Violating Sherman Anti-Trust Law the Collecting of Business Statistics by Trade Groups

WASHINGTON, June 2.—Setting up the clearest code that has ever come from a judicial tribunal, the Supreme Court of the United States yesterday sustained the legality of certain trade associations' activities. By majority opinions it held as legitimate the distribution by trade associations of statistics as to cost of production, cost of transportation, production, stocks on hand and prices at which a commodity has been sold in the usual course of business.

The cases were two important proceedings whose outcome has been long waited by business interests of the country. One was known as the Maple Flooring Manufacturers' Association case and the other as the case of the Cement Manufacturers' Protective Association. The cases had been vigorously prosecuted by the Department of Justice and defended with equal force by the trade association interests. They were accepted as being extremely important because the work of the two associations was held to be typical of that of the great majority of trade associations of the country. Consequently the opinions of the court in both instances are looked upon as establishing an unusually clear cut procedure for trade associations.

In effect the court held that it is the use to which statistics are put rather than their character which constitutes a violation of the Sherman anti-trust law. It clearly pointed this fact out in the majority opinions written by Mr. Justice Harlan Fiske Stone, himself recently attorney general. The character of the information was shown to be important, however.

Dissenting opinions were rendered by Chief Justice Taft, and Justices McReynolds and Sanford, who declared the activities of the maple flooring and cement associations were in violation of the Sherman law under the rules laid down in the lumber and linseed oil cases. The majority held, however, that it was the use to which the lumber and linseed associations put their statistics which appeared to constitute a conspiracy to curtail production or raise prices.

In passing upon the maple flooring case, Justice Stone said at one point:

"We decide only that trade associations or combinations or persons or corporations which openly and fairly gather and disseminate information as to cost of their product, the volume of production, the actual price which the product has brought in past transactions, stocks of merchandise on hand, approximate cost of transportation from the principal point of shipment to the points of consumption, as did these defendants, and who, as they did, meet and discuss such information and statistics without, however, reaching or attempting to reach any agreement or any concerted action with respect to prices or production or restraining competition, do not thereby engage in unlawful restraint of commerce."

Legitimate Subjects of Inquiry

"Viewed in this light," said the majority opinion, "can it be said in the present case that the character of information gathered by the defendants, or the use which is being made of it, leads to any necessary inference that the defendants either have made or will make any different or other use of it than would normally be made if like statistics were published in a trade journal or were published by the Department of Commerce, to which all the gathered statistics were made available? The cost of production, prompt information as to cost of transportation, are legitimate subjects of inquiry and knowledge in any industry. So likewise is the production of the commodity in that industry, the aggregate surplus stock and the prices at which the commodity has actually been sold in the usual course of business."

"Restraint upon free competition begins when improper use is made of information through any concerted action which operates to restrain the freedom of action of those who buy and sell," said the majority opinion. It was declared not to be the intent of the Sherman anti-trust law to inhibit the intelligent conduct of business operations, and dissemination of accurate information was classed as applying to such conduct of business.

NIPPON TIN PLATE BOUGHT

Order Divided Between American and Welsh Makers—Gas Pipe Placed Here

NEW YORK, June 2.—Inquiry from all foreign markets continues light, except for a moderate business from Japan. While the Cuban market is apparently fairly active at present, some of the more important orders are either placed directly in Europe or secured by American exporters quoting on European material. An exporter and importer in New York is understood to have recently taken an order from Cuba for about 3000 tons of medium weight rails to be furnished by a German mill.

Japanese business has been largely confined to small lots of material, although one Japanese export house reports having placed orders with American mills for a total of more than 8000 base boxes of tin plate. Following a rather low market on export tin plate, prices ranging from $5.60 or less to $5.65 per base box, c.i.f. Japan or China, American sellers have stiffened export prices to a minimum of about $5.75 per base box, c.i.f. This increase is understood to have been made after bidding had been concluded on the tonnage for the Nippon Oil Co. in Japan, a total of 54,000 base boxes of tin plate. Award was made to Mitsui & Co. of 27,000 base boxes on prices submitted by Welsh tin plate makers and to Iwai & Co. of 27,000 base boxes of American tin plate. The American half of the tonnage, on which the two foremost independent mills are understood to have been low, has not yet been placed by the exporter with the mill.

The 1,100,000 ft. of gas tubing on which the Tokio Gas Co. has been taking bids was placed with Mitsui & Co. and will be supplied by an American mill. The T-rails totaling close to 2000 tons asked for by Tokio municipality went to the Imperial Steel Works in Japan. Kanagawa municipality is asking prices on about ½-mile of 99-lb. girder rails.

The Chinese market is slightly more active than recently, some interest being shown by importers in second hand material. It is claimed by importers in Shanghai that as low as $27.50 per ton, c.i.f., has been quoted on new plate cuttings. Wire shorts continue at about the same market price as in the past few weeks, $44 to $46 per ton, c.i.f. China. Inquiries for tin plate waste waste are current, but offers are still low.

Importers in New York continue to book a fair tonnage of business for Texas. A recent order by a Galveston company totaled about 1000 tons of reinforcing bars. On such bars importers claim to be in a position to quote $8 to $10 per ton less than the current domestic market. Some export business is being placed by American exporters with Canadian mills at what are reported to be highly satisfactory prices. Although official opening of the cotton-tie market is not yet announced, the first cotton bale has been shipped and importers are still hopeful of being able to transact some business in European cotton-ties this season.

FABRICATED STEEL

Awards of 42,300 Tons Make the Week One of the Largest of the Year

Only in five or six weeks of this year have the structural steel awards exceeded those of the past week, when jobs totaling about 38,300 tons were placed with fabricators. A bridge at Portland, Ore., 5125 tons, oil tanks of more than 8000 tons, a Masonic Temple in New Orleans of 3000 tons, a Jewish fraternal building in New York of 2600 tons, a hotel at Atlantic City of 1800 tons are among the more important items making up this total. There is also a fair amount of small work. Inquiries total only about 13,000 tons. Awards include the following:

Arthur Brisbane's Ritz Tower apartment building, New York, 4000 tons, instead of 5000, as at first reported, will be fabricated by the American Bridge Co., with erection by Post & McCord.

Arthur Brisbane, garage, 102nd Street, New York, 900 tons, to Shoemaker Bridge Co.

Bricken loft building, West Forty-seventh Street, New York, 1800 tons, to A. E. Norton, Inc.

President Hotel, Atlantic City, N. J., 1800 tons, to Lehigh Structural Steel Co.

Loft building, Sixth Avenue and Forty-fourth Street, New York, 1200 tons, to A. E. Norton, Inc.

Level Club, Jewish fraternal order, 253-265 West Seventy-third Street, New York, 2600 tons, to New York Shipbuilding Corporation.

Loft building, Seventh Avenue, 1800 tons, to A. E. Norton, Inc.

Phipps Estate, apartment building on Madison Avenue, New York, 1300 tons, to George A. Just Co.

Garage, 134th Street and Twelfth Avenue, New York, 1000 tons, to Hay Foundry & Iron Works.

Y. M. C. A. building, Brooklyn, 750 tons, to George A. Just Co.

Standard Oil Co., miscellaneous buildings, 900 tons, to American Bridge Co.

New York Central Railroad, bridges, 300 tons, to American Bridge Co.

Power station, Cheat Haven, Pa., 350 tons, to Moss Iron Works.

Office building, Morristown, N. J., 300 tons, to American Bridge Co.

Trade School, Worcester, Mass., 320 tons, to Stafford Iron Works, Worcester.

Toledo Edison Co., Toledo, transmission towers, 1150 tons, to American Bridge Co.

McCrory's Stores Corporation, addition to Cleveland store, 160 tons, to Republic Structural Iron Works Co.

Gulf States Steel Co., Birmingham, 650 tons, to Converse Steel Co., Chattanooga.

Humble Oil Co., 15 80,000-bbl. oil storage tanks, Baton Rouge, La., 4500 tons, to Chicago Bridge & Iron Works.

Pan-American Petroleum & Transport Co., Los Angeles, 10 oil storage tanks, 3870 tons, to American Bridge Co.

Masonic Temple, New Orleans, 3000 tons, to Virginia Bridge & Iron Co.

Chesapeake & Ohio, shops at Russell, Ky., 950 tons, to Moss Iron Works.

Hammond Improvement Association, Hammond, Ind., theater, 700 tons, to United Boiler & Heating Co.

Pure Oil Co., 16 small oil storage tanks, Marcus Hook, Pa., 600 tons, to Chicago Bridge & Iron Works.

Summit Avenue Bridge, Dayton, Ohio, 200 tons, to Central States Bridge Co.

Viscose Co., Marcus Hook, Pa., addition to manufacturing plant, 500 tons, to Belmont Iron Works.

Frick Co., Waynesboro, Pa., plant addition, 140 tons, to Belmont Iron Works.

Rockwell Building, Cleveland, 150 tons, to Jones & Laughlin Steel Corporation.

Patton & Tully, Memphis, Tenn., three barges, 540 tons, to American Bridge Co.

Ross Island Bridge, Portland, Ore., 5125 tons, American Bridge Co., low bidder.

Cuneo Building, Howard Street and Ashland Avenue, Chicago, 160 tons, and motion picture theater, Fifty-ninth Street and Kedzie Avenue, Chicago, 338 tons, both awarded to Wendnagel & Co.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

Hotel, Fifth Avenue at Seventy-eighth Street, New York, 300 tons.

M. Kanner, four loft buildings in the garment manufacturing district, New York, 1800 tons.

Hotel, Lebanon, Pa., 1500 tons.

Highway bridge, Hastings, N. Y., 350 tons.

Atlantic Coast Line, bridges, 600 tons.

Hotel, Troy, N. Y., 500 tons.

Mobile & Ohio Railroad, repair shop, Jackson, Tenn., 1500 tons.

General Electric Co., shop building at Schenectady, N. Y., 300 tons.

City of New Haven, Conn., bridge, 260 tons.

Hamilton Building, Worcester, Mass., 220 tons.

Dayton, Ohio, Broadway Bridge, 400 tons.

Texas Co., framing for stills in Texas, 380 tons.

Greensburg, Pa., secondary school, 550 tons.

Southern Pacific Co., San Francisco, 250 tons of plates.

Tropp apartments, Laguna and Pacific Streets, San Francisco, 400 tons.

Delaware River Bridge Commission, Philadelphia approach to Philadelphia-Camden bridge, 1200 tons.

New Jersey Highway Commission, bridge over Hackensack River at Jersey City, 1300 tons.

Railroad bridge, Wilmington, Del., 1500 tons.

RAILROAD EQUIPMENT

Chicago, Milwaukee & St. Paul Orders 1000 More Cars, Making 6500 in All

Aside from an additional order for 1000 cars from the Chicago, Milwaukee & St. Paul, the railroad equipment market is devoid of interesting developments. Including these 1000 cars the total for the week is only slightly over 1200 cars. The items include:

The Chicago, Milwaukee & St. Paul Railroad has ordered 500 flat cars from the Ryan Car Co. and 500 gondolas from the Standard Tank Car Co., which makes 6500 cars it has ordered recently. Orders will be placed shortly for 1000 stock cars.

The Green Bay & Western Railroad has ordered 50 automobile cars from the General American Car Co.

The General Equipment Co. has ordered 10 flat car bodies from the American Car & Foundry Co.

The Hooker Electro-Chemical Co. has ordered 5 tank cars from the American Car & Foundry Co.

The Quaker City Tank Line has ordered 100 tank cars from the Standard Tank Car Co.

The Great Northern will repair 600 box cars in its own shops.

The Rock Island has placed 2 buffet baggage cars with the Pullman Car & Mfg. Corporation.

The New York Central has ordered 50 Hart selective ballast cars from the Rodger Ballast Car Co.

The National Railways of Mexico are inquiring for 10 express cars.

The Monon is inquiring for 5 caboose cars.

COMING MEETINGS

June

Eastern States Blast Furnace and Coke Oven Association. June 4. Annual spring meeting, Youngstown Country Club, Youngstown, Ohio. H. E. McDonnell, Weirton, W. Va., secretary.

National Association of Brass Manufacturers. June 11. General meeting, Edgewater Beach Hotel, Chicago. W. M. Webster, City Hall Square Building, Chicago, commissioner.

American Society for Testing Materials. June 22 to 26. Annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J. C. L. Warwick, 1315 Spruce Street, Philadelphia, secretary-treasurer.

National Foreign Trade Council, June 24 to 26. National Convention, Olympic Hotel, Seattle. O. K. Davis, India House, Hanover Square, New York, secretary.

NON-FERROUS METALS

The Week's Prices

Cents per Pound for Early Delivery.

	Copper, New York		Straits Tin (Spot)	Lead		Zinc	
May	Lake	Electrolytic*	New York	New York	St. Louis	New York	St. Louis
27.....	13.62½	13.37½	56.12½	8.45	8.10	7.45	7.10
28.....	13.62½	13.37½	55.37½	8.50	8.15	7.45	7.10
29.....	13.62½	13.37½	55.50	8.50	8.15	7.45	7.10
June							
1.....	13.62½	13.37½	55.50	8.60	8.25	7.42½	7.07½
2.....	13.62½	13.37½	54.87½	8.60	8.25	7.40	7.05

*Refinery quotation; delivered price ¼c. higher.

New York

NEW YORK, June 2.

All the markets are quiet and prices are generally steady. Buying of copper is satisfactory and prices are firm. Demand for tin is very light with price changes only slight. Demand for lead has eased slightly but quotations are still high. With demand light zinc prices are still firm.

Copper.—The fact that the price of electrolytic copper has stood practically unchanged at 13.62½c., delivered, for several weeks has become subject to comment. Prices ordinarily have been changing with the slightest change in sentiment or conditions. The present stability is explained in several ways. Buying is reported as satisfactory by consumers and although of a hand to mouth character is of sufficient volume to keep producers well satisfied. There have been but minor changes in the London market quotations, usually a disturbing factor. Speculators and dealers there have not been active recently. Curtailment in output may also be regarded as another factor. The market in the last week has been a little more quiet because of the holiday here and holidays in London. Now and then a little electrolytic copper is available at slightly under ruling market quotations which continue firm at 13.62½c., delivered, with exporters bidding 13.55c. to 13.60c., f.a.s. Lake copper is quoted at 13.62½c., New York.

Copper Averages.—The average price of Lake copper for the month of May, based on daily quotations in THE IRON AGE, was 13.64½c. The average price of electrolytic copper was 13.34c., refinery, or 13.59c., delivered.

Tin.—The week has been an exceedingly quiet one with total sales scarcely exceeding 400 tons. Demand for prompt and nearby tin is light with metal for June delivery no higher than early forward delivery. The premium on nearby tin has virtually disappeared. Consumers are still out of the market and none of them are taking any chances but are merely watching developments in London. Sellers are not forcing the metal on unwilling consumers. With the markets closed in London yesterday there was practically no business here and today has been another quiet one. Spot Straits tin today was quoted at 54.87½c., New York, with about 150 tons of futures sold at 54.75c. London quotations are about £2 per ton less than a week ago, with spot standard quoted at £250 10s.; future standard, £250 15s., and spot Straits, £253 10s. The Singapore price yesterday was £255 5s., or £1 higher than a week ago. The statistics for the month when published are reported as likely to be unfavorable because of large shipments from the East and a probable increase in the visible supply.

Lead.—The price range in the lead market is such a wide one, depending upon the attitude of various sellers that quotations above are representative of the average prices obtained. On Thursday, May 28, the leading interest again advanced its price to 8.40c., New York. In the outside market the metal is selling as high as 8.75c. to 8.85c., New York. One large producer at St. Louis is delivering limited amounts on the basis of about 8.15c., St. Louis, with other sellers obtaining as high as 8.40c. to 8.50c., St. Louis. Demand is not as active as it was a week ago, but the situation is a little easier. Buyers have not yet obtained all they desire and in frequent cases their inquiries are carried over from day to day.

Zinc.—The week has been an exceedingly quiet one. With little demand from domestic consumers and a falling off in export buying prime Western zinc has receded but slightly from the high point of the week. For early delivery it is quoted today at 7.05c. to 7.07½c., St. Louis, or 7.40c. to 7.42½c., New York. Despite the inactivity prices are firm.

Nickel.—Shot and ingot nickel in wholesale lots are quoted at 31c. to 32c. per lb., with electrolytic nickel at 38c.

Antimony.—Chinese metal for spot delivery is still somewhat scarce at 17c., New York, duty paid. May-June shipment from China is available at 14c.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is available at 27c. to 28c., delivered.

Old Metals.—The market continues sluggish with little change. Dealers' selling prices are as follows in cents per lb.:

Copper, heavy and crucible	12.75
Copper, heavy and wire	12.00
Copper, light and bottoms	10.75
Heavy machine composition	10.00
Brass, heavy	8.25
Brass, light	7.00
No. 1 red brass or composition turnings	9.00
No. 1 yellow rod brass turnings	8.75
Lead, heavy	7.90
Lead, tea	6.25
Zinc	4.50
Cast aluminum	19.00
Sheet aluminum	19.00

Chicago

JUNE 2.—Tin, lead and zinc have advanced, while antimony has declined. Lead has gone up sharply and business in both lead and zinc has been distinctly better, although still confined largely to orders for nearby or spot shipment. Copper, though unchanged in price, is weaker. Although available supplies of antimony in this country are said to be less than 500 tons, demand is almost nil. Among the old metals all prices are unchanged except on lead pipe, which has advanced. We quote, in carload lots: Lake copper, 13.87½c.; tin, 56.50c.; lead, 8.55c.; zinc, 6.95c.; in less than carload lots, antimony, 19c. On old metals we quote copper wire, crucible shapes and copper clips, 10.50c.; copper bottoms, 9.25c.; red brass, 8.25c.; yellow brass, 7.25c.; lead pipe, 7.25c.; zinc, 4c; pewter, No. 1, 30c.; tin foil, 37c.; block tin, 42c.; all buying prices for less than carload lots.

Welsh Tinplate Stabilization Scheme Ends

WASHINGTON, June 2.—The stabilization scheme which aimed to assist the Welsh tin plate industry to control prices and to restrict output during the difficult periods and depressed times has been unable to stand the strain of the severe depression of the past nine months, according to reliable information. Due to the recent underselling of the official minimum price of 22s. 1½d. per standard box, the Department of Commerce reports that the chairman of the stabilization committee has informed proprietors of works in the district that the stabilization scheme would be brought to an end. The effect of this statement, it is added, has produced a drop of a few pence per box in the price of tin plates.

It is thought that the pooling arrangement in respect to orders may be retained, though this is condemned by some makers on the ground that it means that specialized works are forced to hand over much of their business to other works. The retention of the arrangement, on the other hand, will be the means of saving several small works from closing down.

The Gulf States Steel Co. is building an addition to its steel mill at Gadsden, 50 miles from Birmingham, in the shape of a bar mill, to produce round and flat bars, angles, channels, reinforced concrete and other shapes, with a monthly output of 10,000 tons.

Prices of Finished Iron and Steel Products (Carload Lots)

Tank Plates

F.o.b. Pittsburgh mill, base, per lb.....2c. to 2.10c.
F.o.b. Chicago, base, per lb.....2.20c.

Structural Shapes

F.o.b. Pittsburgh mills, base, per lb.....2c. to 2.10c.
F.o.b. Chicago, base, per lb.....2.20c.

Iron and Steel Bars

Soft steel bars f.o.b. P'gh mills, base, per lb.....2c. to 2.10c.
Soft steel bars f.o.b. Chicago, base, per lb.....2.10c. to 2.20c.
Reinforcing steel bars f.o.b. P'gh mills, base, per lb., 2.00c. to 2.10c.
Rail steel bars, f.o.b. Chicago district mills, base, per lb..2.10c.
Common iron bars, f.o.b. Chicago, base, per lb.....2.05c.
Refined iron bars, f.o.b. P'gh mills, base, per lb.....3.00c.
Common iron bars, eastern Pa. mill, base, per lb.....2.10c.

Hot-Rolled Flats

Hoops, base, per lb., Pittsburgh.....2.40c.
Bands, base, per lb., Pittsburgh.....2.40c.
Strips, 6 in. and narrower, base, per lb., Pittsburgh.....2.40c.
Strips, 6 to 12-in., base, per lb., Pittsburgh.....2.20c.
Strips, 6 in. and narrower, Chicago.....2.50c.
Strips, wider than 6 in., Chicago.....2.40c.

Cold-Finished Steel

Screw stock and shafting, f.o.b. P'gh mills, base, per lb., 2.60c. to 2.70c.
Screw stock and shafting, f.o.b. Chicago, base, per lb., 2.70c. to 2.80c.
Screw stock, base, per lb., Cleveland.....2.75c.
Shafting, ground, f.o.b. mill, base, per lb.....3.10c.
Strips, f.o.b. P'gh mills, base, per lb.....3.65c. to 3.75c.
Strips, f.o.b. Cleveland mills, base, per lb.....3.50c. to 3.75c.
Strips, f.o.b. delivered Chicago, base, per lb....4.00c. to 4.05c.
Strips, f.o.b. Worcester mills, base, per lb.....3.90c.

Wire Products

(To jobbers in car lots f.o.b. Pittsburgh and Cleveland)

Nails, base, per keg.....$2.70 to $2.75
Galvanized nails, 1-in. and longer, base plus..... 2.00
Galvanized nails, shorter than 1 in., base plus..... 2.25
Bright plain wire, base, No. 9 gage, per 100 lb..... 2.50
Annealed fence wire, base, per 100 lb..... 2.65
Spring wire, base, per 100 lb..... 3.50
Galvanized wire, No. 9, base, per 100 lb..... 3.10
Galvanized barbed, base, per 100 lb..... 3.45
Galvanized staples, base, per keg..... 3.45
Painted barbed wire, base, per 100 lb..... 3.20
Polished staples, base, per keg..... 3.20
Cement coated nails, base, per count keg..... 2.00
*Bale ties, carloads, to jobbers....75, 15 and 5 per cent off list
*Bale ties, carloads, to retailers...75, 10 and 6 per cent off list
Woven wire fence, base, per net ton to retailers.....$65.00

Chicago district mill prices are $2 per ton above the foregoing and Chicago delivered prices are $3 per ton above the prices f.o.b. Cleveland and Pittsburgh. Birmingham mill prices $3 a ton higher; Worcester, Mass., mill $3 a ton higher on production of that plant, and Duluth, Minn., mills $2 a ton higher; Anderson, Ind., $1 higher.

*F.o.b. Cleveland.

Sheets

Blue Annealed
(base) per lb.

Nos. 9 and 10, f.o.b. Pittsburgh.....2.30c. to 2.40c.
Nos. 9 and 10 (base) per lb., f.o.b. Chicago dist. mills, 2.50c. to 2.55c.

Box Annealed, One Pass Cold Rolled

No. 28 (base) per lb., f.o.b. Pittsburgh.....3.20c. to 3.30c.
No. 28 (Base) per lb., f.o.b. Chicago dist. mill..3.40c. to 3.45c.

Galvanized

No. 28 (base) per lb., f.o.b. Pittsburgh.....4.25c. to 4.35c.
No. 28 (base) per lb., f.o.b. Chicago dist. mill..4.50c. to 4.55c.

Tin-Mill Black Plate

No. 28 (base) per lb., f.o.b. Pittsburgh.....3.15c. to 3.30c.
No. 28 (base) per lb., f.o.b. Chicago dist. mill..3.50c. to 3.60c.

Automobile Body Sheets

No. 22 (base) per lb., f.o.b. Pittsburgh.....4.30c. to 4.40c.

Long Ternes

No. 28 (base) 8-lb. coating, per lb., f.o.b. mill..4.75c. to 4.90c.

Tin Plate

Standard cokes, per base box, f.o.b. Pittsburgh district mills.....$5.50
Standard cokes, per base box f.o.b. Chicago district mills 5.60
Standard cokes, per base box f.o.b. Elwood, Ind..... 5.60

Terne Plate

(F.o.b. Morgantown or Pittsburgh)
(Per Package, 20 x 28 in.)

8-lb. coating, 100 lb. base.....$11.20	20-lb. coating I. C....$15.50
8-lb. coating I. C.... 11.50	25-lb. coating I. C.... 17.00
15-lb. coating I. C.... 14.35	30-lb. coating I. C.... 18.35
	40-lb. coating I. C.... 20.35

Rivets

Large, f.o.b. P'gh and Cleveland mills, base, per 100 lb., $2.40 to $2.60
Large, f.o.b. Chicago, base, per 100 lb..... 2.75
Small, f.o.b. Pittsburgh.....70, 10, 5 per cent off list
Small, Cleveland .....70 and 10 to 70, 10 and 5 per cent off list
Small, Chicago .....70 and 10 per cent off list

Rails and Track Equipment

(F.o.b.)

Rails, standard, per gross ton.....$43.00
Rails, light, billet, base, per lb.....1.70c. to 1.75c.
Rails, light rail steel, base, per lb.....1.65c. to 1.70c.
Spikes, ⅜ in. and larger, base, per 100 lb.....$2.80 to $3.10
Spikes, ½ in. and smaller, base, per 100 lb..... 3.00 to 3.35
Spikes, boat and barge, base, per 100 lb..... 3.25
Track bolts, all sizes, base, per 100 lb..... 3.90 to 4.25
Tie plates, per 100 lb..... 2.35 to 2.40
Angle bars, base, per 100 lb..... 2.75

Welded Pipe

(F.o.b. Pittsburgh district mills)

Butt Weld

Steel Inches	Black	Galv.	Iron Inches	Black	Galv.
⅛	45	19½	¼ to ⅜	+11	+39
¼ to ⅜	51	25½	½	22	2
½	56	42½	¾	28	11
¾	60	48½	1 to 1½	30	13
1 to 3	62	50½			

Lap Weld

2	55	43½	2	23	7
2½ to 6	59	47½	2½	26	11
7 and 8	56	43½	3 to 6	28	13
9 and 10	54	41½	7 to 12	26	11
11 and 12	53	40½			

Butt Weld, extra strong, plain ends

⅛	41	24½	2 to 3	61	50½
¼ to ⅜	47	30½	¼ to ⅜	+11	+54
½	53	42½	½	21	7
¾	58	47½	¾	28	12
1 to 1½	60	49½	1 to 1½	30	14

Lap Weld, extra strong, plain ends

2	53	42½	2	23	9
2½ to 4	57	46½	2½ to 4	29	15
4½ to 6	56	45½	4½ to 6	28	14
7 to 8	52	39½	7 to 8	21	7
9 and 10	45	32½	9 to 12	16	2
11 and 12	44	31½			

To the large jobbing trade the above discounts on steel pipe are increased (on black) by one point, with supplementary discount of 5 per cent and (on galvanized) by 1½ points, with supplementary discount of 5 per cent. On iron pipe, both black and galvanized, the preferentials to large jobbers are 1, 5 and 2½ per cent beyond the above discount.

NOTE—The above discounts on steel pipe also apply at Lorain, Ohio. Chicago district mills have a base 2 points less. Chicago delivered base 2½ points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point having the lowest rate to destination.

Boiler Tubes

(F.o.b. Pittsburgh)

Lap Welded Steel		Charcoal Iron	
2 to 2¼ in.	27	1½ in.	+18
2½ to 2¾ in.	37	1¾ to 1⅞ in.	+ 8
3 in.	40	2 to 2¼ in.	— 2
3¼ to 3¾ in.	42½	2½ to 3 in.	— 7
4 to 13 in.	46	3¼ to 4½ in.	— 9

Beyond the above discounts, 5 fives extra are given on lap welded steel tubes and 2 tens on charcoal iron tubes.

Standard Commercial Seamless Boiler Tubes

Cold Drawn			
1 in.	60	3 in.	45
1¼ and 1½ in.	52	3¼ to 3½ in.	47
1⅝ in.	36	4 in.	50
2 and 2¼ in.	31	4½, 5 and 6 in.	45
2½ and 2¾ in.	39		

Hot-Rolled

2 and 2¼ in.	34	3¼ and 3½ in.	50
2½ and 2¾ in.	42	4 in.	53
3 in.	48	4½, 5 and 6 in.	48

Less carloads, 4 points less. Add $8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

Carbon under 0.30 base.....85 to 87 per cent off list
Carbon 0.30 to 0.40 base.....83 to 85 per cent off list
Plus usual differentials and extra for cutting. Warehouse discounts range higher.

Seamless Locomotive and Superheater Tubes

	Cents per Ft.		Cents per Ft.
2-in. O.D. 12 gage....	14¼	2¼-in. O.D. 10 gage..	18
2-in. O.D. 11 gage....	15	3-in. O.D. 7 gage.....	33
2-in. O.D. 10 gage....	16	1½-in. O.D. 9 gage...	15
2¼-in. O.D. 12 gage..	16	5¾-in. O.D. 9 gage...	50
2¼-in. O.D. 11 gage..	17	5½-in. O.D. 9 gage...	52

Prices of Iron and Steel Products and Raw Materials

Ores

Lake Superior Ores, Delivered Lower Lake Ports

Old range Bessemer, 51.50 per cent iron	$4.55
Old range non-Bessemer, 51½ per cent iron	4.40
Mesaba Bessemer, 51.50 per cent iron	4.40
Mesaba non-Bessemer, 51.50 per cent iron	4.25
High phosphorus iron, 51.50 per cent	4.15

Foreign Ore, per Unit, c.i.f. Philadelphia or Baltimore

Iron ore, low phos., copper free, 55 to 58 per cent iron in dry Spanish or Algerian	9.50c. to 10c.
Iron ore, Swedish, average 66 per cent iron	9.50c.
Manganese ore, washed, 51 per cent manganese, from the Caucasus	45c.
Manganese ore, Brazilian or Indian, nominal	42c.
Tungsten ore, high grade, per unit, in 60 per cent concentrates	$9.00 to $11.00
Chrome ore, Indian basic, 48 per cent Cr_2O_3, crude, per ton, c.i.f., Atlantic seaboard	22.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS_2, New York	80c.

Coke and Coal

(Per Net Ton)

Furnace coke, f.o.b. Connellsville prompt	$2.85
Foundry coke, f.o.b. Connellsville prompt	$4.00 to 4.25
Mine run steam coal, f.o.b. W. Pa. mines	1.50 to 2.00
Mine run coking coal, f.o.b. W. Pa. mines	1.50 to 1.75
Mine run gas coal, f.o.b. W. Pa. mines	2.00 to 2.25
Steam slack, f.o.b. W. Pa. mines	1.45 to 1.50
Gas slack, f.o.b. W. Pa. mines	1.50 to 1.60

Ferroalloys

Ferromanganese, domestic, 80 per cent, furnace, or seaboard, per ton	$115.00
Ferromanganese, foreign, 80 per cent, f.o.b. Atlantic port, duty paid	$110.00 to 115.00
Ferrosilicon, 50 per cent, delivered	$82.50 to 85.00
Ferrosilicon, 75 per cent	145.00 to 147.50
Ferrotungsten, per lb. contained metal	90c. to 95c.
Ferrochromium, 4 per cent carbon and up, 60 to 70 per cent Cr., per lb. contained Cr. delivered	11.50c.
Ferrovanadium, per lb. contained vanadium	$3.50 to $4.00
Ferrocarbontitanium, 15 to 18 per cent, per net ton	200.00

Spiegeleisen, Bessemer Ferrosilicon and Silvery Iron

(Per gross ton furnace unless otherwise stated)

Spiegeleisen, domestic, 19 to 21 per cent	$33.00
Spiegeleisen, domestic, 16 to 19 per cent	32.00

Ferrosilicon, Bessemer, 10 per cent, $34.50 to $35.50; 11 per cent, $37 to $38; 12 per cent, $39.50 to $40.50; electric furnace ferrosilicon, 10 per cent, $38; furnace with an advance of $1 per unit for material above 10 per cent.

Silvery iron, 6 per cent, $23 to $24; 7 per cent, $24 to 25; 8 per cent, $25.50 to $26.50; 9 per cent, $27.50 to $28.50; 10 per cent, $29.50 to $30.50; 11 per cent, $32 to $33; 12 per cent, $34.50 to $35.50.

Fluxes and Refractories

Fluorspar, 85 per cent and over calcium fluoride, not over 5 per cent silica, both gravel and No. 2 lump, per net ton, f.o.b. Illinois and Kentucky mines	18.50
Fluorspar, foreign, 85 per cent calcium fluoride, not over 5 per cent silica, c.i.f. Philadelphia, duty paid, per net ton	18.00
Fluorspar, No. 1 ground bulk, 95 to 98 per cent calcium fluoride, not over 2½ per cent silica, per net ton, f.o.b. Illinois and Kentucky mines	32.50

Per 1000 f.o.b. works:

Fire Clay	High Duty	Moderate Duty
Pennsylvania	$43.00 to $46.00	$40.00 to $43.00
Maryland	48.00 to 50.00	43.00 to 45.00
Ohio	43.00 to 46.00	40.00 to 43.00
Kentucky	43.00 to 45.00	40.00 to 43.00
Illinois	43.00 to 45.00	40.00 to 43.00
Missouri	45.00 to 48.00	38.00 to 42.00
Ground fire clay, per ton		6.50 to 7.50

Silica Brick:	
Pennsylvania	40.00
Chicago	49.00
Birmingham	54.00
Silica clay, per ton	8.00 to 9.00
Magnesite Brick:	
Standard size, per net ton (f.o.b. Baltimore and Chester, Pa.)	65.00
Grain magnesite, per net ton (f.o.b. Baltimore and Chester, Pa.)	40.00
Chrome Brick:	
Standard size, per net ton	48.00

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham and Chicago)

Machine bolts, small rolled threads	60 and 10 per cent off list
Machine bolts, all sizes, cut threads	50, 10 and 10 per cent off list
Carriage bolts, smaller and shorter, rolled threads	50, 10 and 10 per cent off list
Carriage bolts, cut threads, all sizes	50 and 10 per cent off list
Eagle carriage bolts	65 and 10 per cent off list
Lag bolts	60, 10 and 10 per cent off list
Plow bolts, Nos. 1, 2 and 3 heads	50 and 10 per cent off list
Other style heads	20 per cent extra
Machine bolts, c.p.c. and t. nuts, ⅝ x 4 in.,	45, 10 and 5 per cent off list
Larger and longer sizes	45, 10 and 5 per cent off list
Hot-pressed nuts, blank or tapped, square	4c. off list
Hot-pressed nuts, blank or tapped, hexagons	4.40c. off list
C.p.c. and t. square or hex. nuts, blank or tapped	4.10c. off list
Bolt ends with hot pressed nuts	50, 10 and 10 per cent off list
Bolt ends with cold pressed nuts	45, 10 and 5 per cent off list
Washers*	6c. to 5.50c. off list

*F.o.b. Chicago and Pittsburgh.

The discount on machine, carriage and lag bolts is 5 per cent less than above for less than car lots. On hot pressed and cold punched nuts the discount is 25c. less per 100 lb. than quoted above for less than car lots.

(Quoted with freight allowed within zone limits)

Semi-finished hex. nuts:	
⅞ in. and smaller, U. S. S.	80, 10 and 5 per cent off list
⅞ in. and larger, U. S. S.	75, 10 and 5 per cent off list
Small sizes, S. A. E.	80, 10, 10 and 5 per cent off list
S. A. E., ⅝ in. and larger	75, 10, 10 and 5 per cent off list
Stove bolts in packages	80 and 5 per cent off list
Stove bolts in bulk	80 and 5 and 2½ per cent off list
Tire bolts	50, 10 and 5 per cent off list

Semi-Finished Castellated and Slotted Nuts

(Prices delivered within specified territories)

(To jobbers and consumers in large quantities)

	Per 100 Net S. A. E.	Per 100 Net U. S. S.		Per 100 Net S. A. E.	Per 100 Net U. S. S.
¼-in.	$0.44	$0.44	⅝-in.	$2.35	$2.40
5/16-in.	.515	.515	⅞-in.	3.60	3.60
⅜-in.	.62	.66	1-in.	5.55	5.80
7/16-in.	.79	.90	1⅛-in.	8.90	8.90
½-in.	1.01	1.05	1¼-in.	12.60	13.10
9/16-in.	1.38	1.42	1⅜-in.	18.35	18.35
⅝-in.	1.70	1.73	1½-in.	21.00	21.00

Larger sizes—Prices on application.

Cap and Set Screws

(Freight allowed within zone limits)

Milled cap screws	80, 10 and 5 per cent off list
Milled standard set screws, case hardened,	80 and 10 per cent off list
Milled headless set screws, cut thread	80 and 10 per cent off list
Upset hex. head cap screws, U. S. S. thread,	80, 10, 10 and 5 per cent off list
Upset hex. cap screws, S. A. E. thread,	80, 10, 10 and 5 per cent off list
Upset set screws	80, 10 and 10 per cent off list
Milled studs	75 per cent off list

Semi-Finished Steel, f.o.b. Pittsburgh or Youngstown, per gross ton

Rolling billets, 4-in. and over	$35.00
Forging billets, ordinary carbons	40.00
Forging billets, guaranteed analysis	45.00
Sheet bars	35.00
Slabs	35.00
*Wire rods, common soft, base, No. 5 to ⅜-in.	40.00
Wire rods, common soft, coarser than ⅜-in.	$2.50 over base
Wire rods, screw stock	$5.00 per ton over base
Wire rods, carbon 0.20 to 0.40	3.00 per ton over base
Wire rods, carbon 0.41 to 0.55	5.00 per ton over base
Wire rods, carbon 0.56 to 0.75	7.50 per ton over base
Wire rods, carbon over 0.75	10.00 per ton over base
Wire rods, acid	15.00 per ton over base
Skelp, grooved, per lb.	2c.
Skelp, sheared, per lb.	2c.
Skelp, universal, per lb.	3c.

*Chicago mill base is $48. Cleveland mill base, $46.

Alloy Steel

(F.o.b. Pittsburgh or mill)

S. A. E. Series Numbers	Bars 100 lb.
2100* (½% Nickel, 10 to 20 per cent Carbon)	$3.00 to $3.25
2300 (3½% Nickel)	4.50 to 4.75
2500 (5% Nickel)	6.00 to 6.25
3100 (Nickel Chromium)	3.50 to 3.65
3200 (Nickel Chromium)	5.50
3300 (Nickel Chromium)	7.50 to 7.75
3400 (Nickel Chromium)	6.50 to 6.75
5100 (Chromium Steel)	3.50
5200* (Chromium Steel)	7.50 to 8.00
6100 (Chromium Vanadium bars)	4.25 to 4.50
6100 (Chromium Vanadium spring steel)	4.00 to 4.25
9250 (Silicon Manganese spring steel)	3.50
Carbon Vanadium (0.45 to 0.55 Carbon, 0.15 Vanadium)	4.25 to 4.50
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chromium, 0.15 Vanadium)	4.50
Chromium Molybdenum bars (0.80—1.10 Chromium, 0.25—0.40 Molybdenum)	4.25
Chromium Molybdenum bars (0.50—0.70 Chromium, 0.15—0.25 Molybdenum)	3.75
Chromium Molybdenum spring steel (1—1.25 Chromium, 0.30—0.50 Molybdenum)	4.75 to 5.00

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for coal drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10-in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4-in. down to and including 2½-in. squares, the price is $5 a gross ton above the 4 x 4 billet price.

*Not S. A. E. specifications, but numbered by manufacturers to conform to S. A. E. system.

PERSONAL

Harold F. Welch, who has been appointed general manager of sales of the Niles-Bement-Pond Co., machine tool manufacturer, as mentioned in last week's issue, will take up his residence at Hamilton, Ohio, about July 1. The Hamilton office will hereafter be the headquarters for the general sales department. Mr. Welch has been with the Niles-Bement-Pond Co. for 15 years, having started with the company following his graduation from Cornell University in 1910. After a course of apprenticeship training in the shops he joined the sales organization and eventually became manager of the railroad department. Recently he was appointed district sales manager in the New York territory and his further promotion to general manager of sales is a part of the plan of reorganization of the activities of the Niles-Bement-Pond Co.

H. F. WELCH

—

Judge E. H. Gary, chairman of the board, United States Steel Corporation, is now in Birmingham, stating to the newspapers that he is taking a course on diet in the hospital of the Tennessee Coal, Iron & Railroad Co., that he is making a slower and more thorough inspection of works of the corporation than recently possible and will visit territory surrounding Birmingham.

—

John M. Webster, treasurer Davis & Farnum Co., Waltham, Mass., is recovering from an operation for appendicitis. He is mayor of Somerville, serving his fourth year. He will not be a candidate for re-election, as he proposes to devote all his time to his foundry interests.

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W. J. MacNeill has been appointed superintendent of the Federal Malleable Co., West Allis, Wis.

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S. O. Hobart, who has resigned from the superintendency of the Warwick furnaces, Pottstown, Pa., operated by the Eastern Steel Co., has been appointed manager of the plant of the Hudson Valley Coke & Products Corporation, Troy, N. Y. The latter plant, when completed, will consist of a battery of 55 by-product coke ovens and a blast furnace. Mr. Hobart had been connected with the Eastern Steel Co. for 25 years.

—

Milton L. Green has become associated with the L. A. Green Railway Equipment Co., First National Bank Building, Pittsburgh, following the completion of a course in engineering at a military school.

—

Ira D. Grove has resigned as sales manager of the Lees-Bradner Co., Cleveland, machine tool manufacturer, and plans to spend the next few months in Florida.

—

H. J. Davis, formerly secretary-treasurer of the Cleveland Armature Works, has been made general manager, following the resignation of F. M. Hibben. The latter is now connected with the National Electrical Appliance Co., East 125th Street, Cleveland. The Armature works makes grinding, buffing and polishing machines in addition to its other line.

C. Bailey, traffic manager, Judson Mfg. Co., San Francisco, has been appointed manager of the company's buying department to succeed Harry Gallet, who now has charge of special work in the company's sales department. Mr. Bailey will also continue for the present to supervise the traffic department.

—

David Baker, consulting metallurgical engineer, 1011 Chestnut Street, Philadelphia, has reopened his office after an absence of 12 years in Newcastle, Australia, during which he has been engaged in establishing the iron and steel department of the Broken Hill Proprietary Co., Ltd. He will devote himself to problems connected with the construction and operation of iron and steel works.

—

Harry Scullin, president Scullin Steel Co., St. Louis, was elected president of the Associated Industries of Missouri at its annual meeting in St. Louis, May 28. Other officers elected follow: First vice-president, R. R. Clark, St. Joseph; second vice-president, Bruce Forrester, Kansas City; treasurer, R. W. Williams, St. Louis, and managing director, Elmer Donnell, St. Louis. The association was active in the successful campaign waged at the last session of the Missouri Legislature to obtain a workmen's compensation act.

—

Dr. Julius Klein, director of the Bureau of Foreign and Domestic Commerce, will sail on the George Washington June 10, for a three months' inspection tour, which will include most of the larger cities in Europe. He plans to visit the offices there of the Department and to survey competitive conditions in Continental markets, obtaining first-hand information on problems affecting the extension of American trade.

—

Robert A. Wilson, who for ten years has been associated with Baush Machine Tool Co. in various engineering capacities, for the last two years in charge of the company's Chicago office, has been appointed chief engineer for the Hoefer Mfg. Co., Freeport, Ill., maker of drilling machinery.

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George A. Muir, who has been connected with the Denver office of the Allis-Chalmers Mfg. Co. for the past five years, and for ten years previously with the machinery department of the Mine & Smelter Supply Co., Denver, has been elected president and manager of the Advance Machinery & Supply Co., Denver, manufacturer of the Advance mechanical stoker and the Advance soot blower and representative of several manufacturers.

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L. R. Meisenholter, specialist in railroad shop and steel plant equipment, who during the war was a member of the advisory board gathered by the War Department for consultation on the design of machinery for making heavy munitions, will be in charge of assembling varied exhibits, including transportation, machinery, mines and metallurgy and manufactures at the Sesquicentennial International Exposition, to be held in Philadelphia. Mr. Meisenholter is the patentee of a number of appliances in heavy machinery lines. He is a member of the American Society of Mechanical Engineers and the Engineering Society of Pennsylvania; arranged exhibits at the Railway Master Mechanics' convention in Atlantic City, N. J., and for machinery conventions in Madison Square Garden, New York. He was formerly vice-president in charge of mechanical engineering of the Houston Standwood & Gamble Co., maker of heavy machinery, Cincinnati, and had charge of its exhibit at the San Francisco exposition.

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William H. Ahlers, vice-president Buffalo Hoist & Device Co., Buffalo, was elected chairman of the Buffalo section of the American Society of Mechanical Engineers.

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Morris H. Stimson, general manager of the Dunkirk, N. Y., plant of the United States Radiator Co., has resigned, effective June 1. He announced no plans for the future.

Harold W. Hunsiker, of Buffalo, who has long been identified with the steel industry and until recently vice-president of the Sizer Forge Co., has joined the sales force of the United Alloy Steel Corporation, Canton, Ohio, as special representative. He will devote most of his time to the sale of alloy steels among manufacturers of oil well equipment.

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Frank A. Hunter, who has been treasurer and sales manager of the Hunter Saw & Machine Co., Pittsburgh, since its inception, has been elected president and general manager to succeed his brother, the late Harry S. Hunter. Joseph Kennedy remains vice-president, R. E. Vaughn, secretary, was elected treasurer, and Frank A. Hunter, Jr., was made a director. Frank A. Hunter received his education in the public schools of Pittsburgh. His practical knowledge of mechanics was obtained in various machine shops in and about Pittsburgh. He joined the Hunter Anschuetz & Kennedy Co. in 1900 and was one of the organizers and incorporators of the Hunter Saw & Machine Co. in 1905. He was also general manager of the company from 1900 until 1917, during which time he designed and built special equipment to facilitate the manufacture of all kinds of circular metal cutting saws, including inserted tooth saws and saw grinding machines, also an extensive line of hardened steel specialties now manufactured under patents taken out by him.

F. A. HUNTER

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Guy Wear, who has been superintendent of the blast furnaces of the Otis Steel Co., Cleveland, has been appointed general superintendent of the company's blast furnaces, coke ovens, blooming mill and open-hearth departments.

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L. A. Burton, Worcester, Mass., who for a number of years has been engaged in the sales department of the Wickwire Spencer Steel Corporation, has severed his connection with that company to become eastern sales representative for the G. F. Wright Steel & Wire Co., Worcester, Mass., effective June 1, and will continue to sell woven wire products to the hardware trade of New England.

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G. E. Sanderson has been appointed manager of the Syracuse, N. Y., office, 415 Seitz Building, of the Wagner Electric Corporation.

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Charles S. Garland, New York district manager of the Hickman Williams Co., Cincinnati, dealer in pig iron, coke and ferroalloys, sailed for England May 30 on the Olympic to represent the United States as captain of the tennis team which will play in the international matches at Wimbledon early in June. Mr. Garland was a member of the Davis cup team in 1920.

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R. E. Emery, president, Superior Steel Corporation, Pittsburgh, is back at his desk, following a trip covering six weeks in Europe. Mr. Emery said he was much impressed with the industrial activity in France, but that conditions in England were deplorable, because of the low rate of engagement of iron and steel, coal and the shipbuilding industries.

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W. H. Rachwalski of George Stenzel & Co., machinery merchants, Berlin, Germany, specializing in American machine tools, is expected on the Columbus, due to arrive in New York June 5.

Geheimrat Dr. W. V. Opel of the Opel Automobile Works, Berlin, Germany, is expected on the Columbus, due in New York June 5. He will be accompanied by his chief engineer.

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Elmer A. Ringwald has resigned as chief draftsman for Alten's Foundry & Machine Works, Lancaster, Ohio, and accepted a position as designing engineer for the American Rolling Mill Co. at Ashland, Ky.

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Joseph Lappin has been given charge of the New York office of the Union Iron Works, manufacturer of steel boilers, Erie, Pa.

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Becomes Secretary of Mining Engineers

Dr. H. Foster Bain, director, Bureau of Mines, has submitted his resignation to Secretary Work of the Department of the Interior, and on July 1 will become secretary of the American Institute of Mining and Metallurgical Engineering at the headquarters at 29 West Thirty-ninth Street, New York. Dr. F. F. Sharpless, the retiring secretary, will resume his important interests in mining work, but will continue to devote a large part of his time to the institute in association with Dr. Bain.

H. F. BAIN

The American Institute of Mining and Metallurgical Engineering has a membership of 9000. Its activities include the steel industry, the mining and production of copper and other nonferrous metals, the production and refining of petroleum, and the coal industry. J. V. W. Reynders, New York, a steel maker and bridge builder, practising engineering at 120 Broadway, New York, is president.

Dr. Bain has been director of the Bureau of Mines for several years. He has served as editor of the *Mining and Scientific Press* of San Francisco and the *Mining Magazine* of London. He made an extensive examination and report on the mineral resources of China for an American financial group. Recently, at the request of the Argentine Government, he made an examination and report on the utilization of the mineral resources of Argentina and the advisability of establishing an iron and steel industry there.

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Sidney Thompson, president Defiance Screw Machine Products Co., Defiance, Ohio, heads a new company which has been incorporated as the Steel Cross Arm & Cable Equipment Co. At a meeting held in Toledo last week Mr. Thompson was elected president; Myron C. Sherman, Defiance, vice-president; Adolph M. Seegar, Toledo, treasurer; and Carl Richards, Toledo, secretary. The authorized capital is $50,000. For some time the business of the company has been conducted at the offices of the Defiance Screw Machine Products Co. Negotiations for a manufacturing site have been in progress, both Defiance and Napoleon, Ohio, being considered in this connection. The patents held by the company cover steel top arm extensions for telegraph poles, standard steel cross arms, cable racks and brackets and cable porcelains.

Heat Interfering with Sheet Production

YOUNGSTOWN, June 2.—Valley sheet makers report some interference to production on account of the excessive heat engulfing the Middle West. It has been difficult in some cases to assemble full mill crews and schedules have been curtailed to some extent in consequence.

OBITUARY

GEORGE A. TRUE, formerly president of the Northern Engineering Works, Detroit, and the Northern Crane Works, Ltd., Walkerville, Ont., died at Detroit on May 8, aged 62 years. He was born in the Madeira Islands and as a boy lived in Mount Vernon, Ohio. Most of his active life was spent in Detroit. He was one of the organizers of the Northern Engineering Works in 1899, and the Canadian company was organized in 1912. Mr. True resigned as president of the two companies in 1923 and became chairman.

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ALBERT J. JONES, 42 years old, secretary and general manager of the Acme Machine Tool Co., Cincinnati, shot himself in his office at the company's plant on Sunday evening, May 31. He had been suffering from a nervous breakdown. For 13 years he had been associated with the company. Previous to that he had been with the Lodge & Shipley Machine Tool Co. for eight years. He was one of the most highly esteemed members of the Cincinnati machine tool fraternity and his death was a shock to his legion of friends.

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CHARLES E. POPE, for several years mechanical engineer of the National Malleable & Steel Castings Co., Cleveland, and later for 10 or 12 years engaged in private practice as a consulting mechanical and electrical engineer in Cleveland, died May 16, aged 58 years. He was a member of the American Society of Mechanical Engineers, a retired Captain of Engineers of the Ohio National Guard, and prominent in the Masonic organization.

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RIFFE POPE, president and general manager Monitor Furnace Co., Cincinnati, died on May 29, following an operation in that city. He was 38 years of age and is survived by his wife and three children.

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JOSEPH J. LINDNER, director of the Buffalo Mfg. Co., Buffalo, and a lifelong resident of that city, died at his home on May 27, following a month's illness. He was 55 years of age.

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JOACHIM G. GIAVER, structural engineer, designer of foundations and structural work on more than 400 large buildings, including the Equitable Building, New York, died in Chicago, May 31. He began his career in this country in 1882, when he arrived from Norway, where he was born in 1856.

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CHARLES F. DROZESKI, president Central Malleable Castings Co., Franklin Park, Ill., died at Evanston, Ill., of heart disease May 26 at the age of 63.

E. L. CLEAVELAND, formerly president Garden City Foundry Co., Chicago, died in that city May 29. His father was the founder of the Garden City company, which is among the oldest jobbing foundries in Chicago.

New East River Power Station the World's Largest

It is expected that the $12,000,000 building for the new plant of the New York Edison Co. will be completed by the end of the year. The station will contain nine 60,000-kw. turbo-generators, each 10,000 kw. larger than the largest single-unit machine now in operation. Contract for the first two machines has been given to the General Electric Co. Each generator will weigh 1,182,500 lb. As it will be necessary to handle weights up to 185 tons, two 200-ton traveling cranes will be installed in the turbine room.

The East River Station will be the world's largest generating station. Operated at full capacity, it would be capable of serving any State in the United States, outside of New York, according to data compiled by the Geological Survey.

American Shipping Gains

WASHINGTON, June 1.—Approximately two-thirds of an increase of 3,100,000 tons in the export trade from the United States in 1924 over 1923 was carried in American flag vessels, according to records of the Bureau of Research, United States Shipping Board. The export total tonnage in 1924 was in excess of 52,260,000 tons. Exports carried in American vessels in 1924 increased to 18,300,000 tons, or 35 per cent of the total, as compared with 16,200,000 tons, or 33 per cent of the 1923 total.

Receivers for Bancroft-Jones Corporation

BUFFALO, June 2.—Bancroft-Jones Corporation, Buffalo, has been placed in equity receivership with three receivers appointed following an equity conservation suit brought by a New Jersey creditor in New York City early in May. Receivers are Alfred M. Saperston, Buffalo, and Fred R. Hazard and E. Bright Wilson, both of New York. The receivers at a recent meeting decided to liquidate the business in two months, when several contracts will have been completed.

No attempt will be made by the receivers to reorganize. Business will be sold to highest bidder. A statement by Mr. Saperston says that the company got into financial difficulties by losing money on contracts. Creditors claims are $310,000. "It looks as if we would not get more than $225,000 for property and equipment," says Mr. Saperston.

Gold Tonic Strengthens Convalescent Europe

(*Concluded from page* 1657)

January and February. The slightly lower level is probably connected with the decline in prices here and the continued sizable export balance in our foreign trade. Lower prices here mean a greater purchasing power for the dollar, and the excess of exports over imports means a greater demand for dollars to settle foreign trade balances.

NEVERTHELESS, conditions are on the whole relatively favorable. The situation means much to world trade and to this country in particular. *It finally clinches the resumption of the gold basis for money throughout world trade, and it insures greater price stability by enhancing the purchasing power of English exchange, which will tend to increase demand for our products in the long run.*

The French franc has continued to slip and was barely steady in April. At the end of May it was lower. The uncertainty which exists in French politics and the raising of the maximum limit for note issues in France are the chief causes of weakness. Recovery continued in the Japanese yen in April, but at the end of May it was a little lower. South American exchanges have shown mixed trends. Brazilian exchange was off as usual at this season. Argentine exchange, after a decline in April, as shown in Fig. 4, was up sharply at the end of May.

Growing stability in foreign exchange will tend toward improved foreign trade.

NEW TRADE PUBLICATIONS

Bolts, Nuts, Screws and Rivets.—Cap Screw & Nut Co. of America, 45 Lafayette Street, New York, Catalog No. 1, with list prices on a variety of bolts, machine, cap, coach, wood and other screws; nuts, spring cotters, rivets and washers.

Gears.—Boston Gear Works Sales Co., Norfolk Downs, Quincy, Mass. Catalog No. 46, 1925, 190 pages, 3½ x 6 in. In addition to gears of various types and materials, the catalog includes lists on sprockets and chain, speed reduction units, steel bushings, pulleys, ball bearings and other transmission equipment.

Ball Bearings.—New Departure Mfg. Co., Bristol, Conn. Thirty-one engineering data bulletins for the reference book, F. E. edition, issued by the company. In these sheets are given general rules for mounting and handling; clamping and retaining methods; the adapter sleeve in mounting; capacities of single and double row; Radax and magneto ball bearings at various speeds; mounting practice (revised); closures; calculations of bearing loads due to gears; angular contact ball bearings; sizes for horizontal electric motors. Other sheets give descriptions and price lists; mountings for centrifugal separator basket driving shaft, and use of ball bearings in polishing head with integral motor. A revised table of contents has also been issued.

Ball Bearings.—Standard Steel and Bearings, Inc., Plainville, Conn. New SRB Data Sheets of shaft and housing bore limits, equivalent tables and other special information helpful in properly applying ball bearings to various types of equipment.

Taps, Dies, Screw Plates and Reamers.—Butterfield & Co., division of the Union Twist Drill Co., Derby Line, Vt. Catalog No. 19, 188 pages 5 x 7 in. indexed. A wide variety of taps, including spiral-fluted and high-speed-steel taps is shown in a section of 48 pages, which is followed by pages describing round dies and a large variety of screw plates. The reamer section comprises 25 pages, and useful tables and general information is included.

Motors for Metal Working Machines.—Fairbanks, Morse & Co., Chicago. Bulletin H 306, 12 pages. Deals briefly with the company's squirrel-cage induction, slip-ring and direct-current motors for machine tool service, showing more than 30 applications of these motors to a variety of types and makes of machines.

Screws, Bolts, Rivets and Nuts.—Pheoll Mfg. Co., 5700 Roosevelt Road, Chicago. Catalog of 97 pages, thumb indexed. Lists of machine screws of steel and of brass, cap screws and nuts of various types are shown, as well as rivets, connecting rod bolts and clevis pins, threaded rods, wires and studs, brass washers and other material. There are five pages of illustrations of special machine screws and bolts and also illustrations of metal stampings made by the company. A large number of useful reference tables are included in the catalog, which is unusually well-illustrated and arranged.

Bull Riveters.—Hanna Engineering Works, 1765 Elston Avenue, Chicago. Bulletin R-204, describes in detail the principle of operation and advantages of the company's pneumatic machines. The illustrations include the application of the various types of machines, which are available in sizes having from 4 in. to 21 ft. reach, and in capacities from 6 to 150 tons.

Shovels.—Wood Shovel & Tool Co., Piqua, Ohio. Booklet of 50 pages, 4½ x 8½ in. under the title of "A Text Book on Shovels, Spades and Scoops." Features of the H. K. Wood Mo-lyb-den-um steel shovel, including the step, handle, blade and other parts, and data are given on the physical characteristics of the material used. A broad line of shovels, including molders, furnace or charging scoop, and concrete or ore shovels, is described and specifications and list prices are given. A section is devoted to spades and there are illustrations of a large variety of handles. The booklet is printed in blue on green and on each page is illustrated the use of the various shovels described. From an artistic, as well as a practical standpoint, the booklet is unusually attractive.

Strip Steel, Hoop and Package Reinforcements.—Acme Steel Goods Co., 2840 Archer Avenue, Chicago, Catalog No. 25. Devoted to description of cold rolled strip steel, hot rolled hoop and cold rolled galvanized strip steel. The method of applying nailless strap is shown in several pages and various types of nailed box strap are described. Other products shown include barbed box straps, bale ties and buckles, shook tying equipment, steel hoops, bottle box hardware and stapling wire. Illustrations show the use of these products.

Fire Pumps.—Standard Turbine Corporation, Scio, N. Y. Bulletin, volume 3, describing the company's turbine-driven underwriters fire pumps.

Foundry Sand Cutting Machines.—American Foundry Equipment Co., 366 Madison Avenue, New York. Catalog No. 680, 40 pages, 7½ x 10½ in. The savings in labor as compared to shovel cutting of foundry sand are reviewed, and the features and capacities of the several types and sizes of machines made by the company are described in detail. The illustrations include views of the mechanism and several installations of the equipment.

Crucibles.—McCullough-Dalzell Crucible Co., Pittsburgh. Booklet of sizes and capacities of crucibles for brass melting. Information on the care of crucibles is included.

Horizontal Storage Tanks.—Youngstown Boiler & Tank Co., Youngstown, Ohio. Leaflet giving specifications of company's standard horizontal storage tanks, showing pipe connections, manholes, etc.

Machine Tools.—Oesterlein Machine Co., Cincinnati. Booklet devoted to explanation of the alinement limits and testing methods employed in building the company's Ohio milling machines, grinders, and tilted rotaries.

Sectional Pipe Coverings.—Robert A. Keasbey Co., Bank and West Streets, New York. Four-page folder dealing with Armorak sectional pipe coverings for brine, ammonia and ice-water pipes. It is made in different thicknesses of hair felt. Insulation of fittings is provided for, as well as straight pipe.

Diesel Engines.—Fulton Iron Works Co., St. Louis. Bulletin No. 808 of 4 pages is devoted to type J Diesel engines ranging from 560 to 1550 b.hp. This type is built with 3, 4, 6 or 8 cylinders for the four sizes, all operating at 164 r.p.m. The two intermediate sizes are 750 and 1150 hp.

Quick Trip Graphic Meter.—Esterline-Angus Co., Indianapolis. Bulletin 525 of four pages describes an instrument which automatically increases the rate of chart feed from inches per hour to inches per second and thus records any disturbance occurring in a power system. It restores the hourly chart speed, resetting it at the proper time on the chart, when the disturbance is over.

"Forty Years of Progress," a 62-page booklet published recently by the Harnischfeger Corporation, Milwaukee, successor to the Pawling & Harnischfeger Co., outlines in an interesting manner the history of the company from 1884 to 1924, which history was given in brief in THE IRON AGE of Jan. 22. There are illustrations of the company's early shops, and some of its early products. Photographic reproductions of the officers and directors of the corporation are included and a brief outline of the business history of each is given. A section under the title of "A Trip Through the Plant," describes and illustrates many of the departments. The last half of the book is devoted to illustrated descriptions of the corporations various products, cranes and trolleys, contractors equipment and drilling and boring machines being shown.

New Books Received

Molybdenum, Cerium and Related Alloy Steels. By H. W. Gillett and E. L. Mack. Pages 299, 6 x 9¼ in., illustrated. Published by the Chemical Catalogue Co., Inc., 19 West Twenty-fourth Street, New York. Price, $4 net.

Mechanical Underground Loading in Metal Mines. By Charles E. Van Barneveld. Pages 639, 5⅝ x 8⅝ in., illustrated. Published as cooperative work between the U. S. Bureau of Mines, Mississippi Valley Station, and the Missouri School of Mines and Metallurgy, Rolla, Mo. Price, $1.

Materials and Their Application to Engineering Design. By E. A. Allcut and E. Miller. Pages 519, 6½ x 9 in., illustrated. Published by the J. B. Lippincott Co., 227 South Sixth Street, Philadelphia. Price, $12.50.

Die Edelstähle. By F. Rapatz, Pages 219, 5½ x 8¼ in., illustrated. Published by Julius Springer, Linkstrasse, 23-24, Berlin, W. 9. Price, 12 gold marks.

Industrial Notes

The Foreign & Domestic Commodities, Inc., 629-35 West Twenty-third Street, New York, exporter and importer, also manufacturer of radio equipment, has organized the Foreign & Domestic Motor Truck Co., which for the time being will be a distributing branch, handling trucks principally. William P. Barnhart is president.

The Superior Wood Working Co., builder of special cabinet and millwork, Hancock and Berks Streets, Philadelphia, recently incorporated, has taken over a branch established in this line two years ago.

The National Bolt & Nut Co., Pittsburgh, recently installed machinery costing approximately $50,000 for manufacturing carriage and machine bolts. The company now is in a position to handle orders for mixed carload lots of carriage and machine bolts, hot pressed and cold punched nuts, boiler, bridge, ship, structural and tank rivets, and track bolts. John W. Hubbard is president.

The Monry Engineering Corporation, 500 Fifth Avenue, New York, recently organized to enter the manufacturing field, will confine present activities to investigations and management of industrials and public utilities. Alexander Perry is one of the principals.

The Federal Mfg. Co., Columbus, Ohio, manufacturer of electrical fixtures and equipment, is arranging to move its plant and headquarters to Marysville, Ohio, where it has acquired the plant and building formerly occupied by the Standard Stamping Co., now located at Huntington, W. Va.

The Simonds Saw & Steel Co., Fitchburg, Mass., has established 13 service and repair shops for saw mills, planing mills and woodworking factories. This special service is offered to users of saws and planer knives, in addition to quicker delivery, which can be made on new saws and knives which will be carried in stock. In some cases the company has purchased and equipped buildings for this purpose.

The Stearns Conveyor Co., Cleveland, has opened a branch office for material handling equipment in Kansas City, Mo., 3233 Roberts Street, and the New York district office of the company has taken larger quarters at 935 Singer Building, New York. R. J. Hanna is in charge of the Kansas City office. President Earl Stearns said the company has taken the general distribution for the United States of Messitoer conveyor scales, designed to weigh a moving load while on a conveyor.

The Rochester Boiler & Tank Co., Rochester, N. Y., has been taken over by Roulan & Roberts, 217 North Water Street and will be operated under the name of Roulan & Roberts.

The Rex Engineering Co., Dunkirk, N. Y., maker of pressing and bailing machinery, has consolidated with a company at Canistota, N. Y., and will move its plant and equipment to that city shortly.

Trade Changes

General offices of the L. B. Foster Co. have been moved to the warehouse yards at Carnegie, Pa. The company will maintain a mailing office at the former headquarters, Park Building, Pittsburgh, where President L. B. Foster will be located.

The Sharples Specialty Co., specializing in the application of super centrifugal force, Philadelphia, has opened a new office at 688 Howard Street, San Francisco, with L. A. Taylor in charge of the Pacific Coast territory.

The W. W. Sly Mfg. Co., Cleveland, maker of sand blast machinery and foundry equipment, has opened an office at 215 Security Building, 44 Vernon Street, Springfield, Mass., Daniel L. Harris sales engineer in charge. Mr. Harris was educated at Dartmouth College and Yale University and formerly was assistant sales manager of the W. W. Sly company.

The Sullivan Machinery Co. has established a new branch office at Pottsville, Pa., 208 West Market Street, in conjunction with the Pottsville Supply Co., which has been the agent there for Sullivan equipment, including hammer drills, air compressors, drill steel, portable hoists, drill sharpeners, etc. A. K. Owen will continue in charge under direction of Edward W. Noyes district manager at Scranton, Pa.

The Radiant Heat Corporation of America has moved to new quarters at 25 Wilbur Avenue, Long Island City, N. Y., where it has 30,000 sq. ft. of plant area. It manufactures heaters.

The National Engineering Corporation, 50 Federal Street, Boston, has moved to a suite of offices in the Marshall Building, 40 Central Street.

The Webster Mfg. Co., Chicago, has opened a branch sales office at 811 Magee Building, Pittsburgh. E. E. Landahl, who has been associated with the company 13 years, will be in charge.

The Foote Brothers Gear & Machine Co., Chicago, is represented in Southern California and Arizona by the Fulton Engineering Co., 612 American Bank Building, Los Angeles.

The Reed-Prentice Co., Worcester, Mass., has moved its Detroit office from 6526 Cass Avenue to Room 3-245 General Motors Building, T. C. McDonald, manager.

The Firth-Sterling Steel Co., has moved to its new office and warehouse at 1424 East Twenty-fifth Street, N. E., Cleveland. E. S. Jackman & Co., are agents.

The Roller-Smith Co., maker of electrical instruments and circuit breakers, 233 Broadway, New York, has appointed the Detweiler-Bell Co., 101 Milk Street, Boston, and 152 Temple Street, New Haven, Conn., as representative in New England. The new representative succeeds Walter W. Gaskill, who represented the Roller-Smith Co. in that territory for several years.

General offices of Olney J. Dean & Co., 179 West Washington Street, Chicago, have been moved to 137 South LaSalle Street, where larger quarters are available.

Cram's Services, Inc., industrial specialist, Detroit, has moved executive offices to 412-47 Buhl Building.

The Dings Magnetic Separator Co., Milwaukee, announces that M. Heckman, 725 Live Stock Exchange Building, Kansas City, Mo., will handle sales in Kansas and western Missouri.

The Dean Hill Pump Co., Anderson, Ind., has appointed the Stewart Machinery Co., 411 Buder Building, St. Louis, dealer in the St. Louis territory; also E. C. Werner, Woodlawn, Cincinnati, as representative in that territory.

The Kent Engineering Co., district representative of the Conveyors Corporation of America, Chicago, has moved its office to 716-718 Builders Exchange Building, Minneapolis, Minn.

The Winter Brothers Co., Wrentham, Mass., manufacturer of taps and dies, has appointed Warner J. McRae, 320 Market Street, San Francisco, as Pacific Coast representative.

Industrial Finances

The G. A. Gray Co., Cincinnati, has issued $360,000 of serial gold notes, proceeds to be used in financing the erection of the company's new plant at Woodburn Avenue and the Cincinnati, Lebanon & Northern Railroad, Cincinnati. Capitalization of the company will comprise $360,000 6 per cent gold notes, $134,100 6 per cent preferred stock, and 1600 shares of no par value common stock, representing $716,730 of which $556,730 represents earned surplus, leaving $160,000 representing paid-in capital. Net earnings for the past six years have averaged 5.61 times the interest charges on notes. The bond department of the Fifth-Third National Bank, Cincinnati, purchased the entire issue.

The St. Louis Screw Co., St. Louis, has announced that at its annual meeting on July 21, it will vote to increase its capital stock from $750,000 to $2,000,000. Of the increase, $750,000 in 7 per cent preferred stock will be declared as a stock dividend. Par value of the present stock will be changed from $100 to $25, and will be issued in exchange for the old on the basis of four for one. The 20,000 shares of common stock remaining will be issued at not less than par when the directors so determine.

The Western Iron Stores Co., Milwaukee, dealer in machine tools, mechanics' tools, mill supplies, etc., recently effected new financing to meet present and future needs for further expansion. The business was established in 1909 and since 1915 has occupied a three-story building at West Water and Sycamore Streets. Recently a department of garden tools, sporting goods and other retail lines has been added. Present officers are: President, Charles E. Curtis; vice-president, W. W. Ethier; secretary-treasurer, Ralph M. Friend.

Directors of the American Hardware Corporation have declared two extra dividends of $1 each, the first payable May 15, the other July 1, together with a regular quarterly dividend of 75c. a share.

The Ludlum Steel Co. reports net income for the first quarter of $99,119 after depreciation, amortization, interest and Federal taxes. This compared with $90,131 in the same period of 1924.

Net profits of the Wheeling Steel Corporation and subsidiaries for the first quarter, after charging off Federal taxes, depreciation, etc., were $847,784. Surplus, after providing dividends, was $184,922.

P. N. Sigler, receiver of the Pioneer Products Co., Dayton, Ohio, has applied to the Common Pleas Court at Dayton for authority to sell the company's real estate, machinery and general assets.

Machinery Markets and News of the Works

MAY A FAIR MONTH

Machinery Sales Somewhat Better Than In the Preceding Month

More Inquiry Comes from Automobile Industry and Railroads Are Active—Large Orders For Cranes Placed

In spots the machine tool business is better. In the Detroit automobile district things became more active last week, with inquiries emanating from several companies. The Hudson Motor Car Co. inquired for eight or ten special milling machines; the Cadillac Motor Car Co. for several grinding machines and the Chevrolet Motor Co. for about a dozen automatic screw and cutting-off machines. The Ford Motor Co. inquired for four 36-in. planers, two of which were bought.

Eight items have been added to the list of the Chicago, Burlington & Quincy. The Santa Fe is expected to buy against its large list, and the Illinois Central to complete purchases for its Markham yards, Chicago. Orders from the Delaware, Lackawanna & Western Railroad were placed, a large portion of the business going to one New York company.

The Wilde Co., Peoria, Ill., has put out tentative inquiries for additional equipment, and an order for 14 rail drills is taken to indicate that the Illinois Steel Co. will proceed with the remodeling of its Gary, Ind., rail mill.

Cincinnati machine tool builders report that May was one of the best months of the year. Some of the larger plants have been running at a fairly good rate.

An unusually large order for cranes was placed by the Carnegie Steel Co. for its Homestead works, the total being 13 cranes. The Mobile & Ohio is in the market for five cranes, including one of 180-ton capacity, for its new locomotive repair shop at Jackson, Tenn.

New York

NEW YORK, June 2.

PURCHASES by the Delaware, Lackawanna & Western Railroad have featured the week's machine tool business. Among the machines bought were the following: Two 11-in x 5-ft. rapid production lathes, 60-in. x 60-in x 12-ft. planer, 84-in. vertical boring and turning mill, 60-in. horizontal boring mill, 6-ft. radial drill, locomotive axle lathe, 2¼-in. and 3¼-in. turret lathes. Eastern companies have received orders from the Union Pacific, its purchases including a 48-in. car-wheel borer, a 6-ft. radial drill, 12-ft. pneumatic plate flanging clamp and two axle lathes. The Carnegie Steel Co. has bought a 72-in. extra heavy forge lathe.

Demand from miscellaneous industrial sources is no more active, consisting almost entirely of single tool orders.

The Consolidated Gas Co., 130 East Fifteenth Street, New York, has plans for extensions and improvements in its repair and construction shop at 501 East Twenty-first Street, one-story, 65 x 254 ft., to cost about $32,000. W. Cullen Morris is company architect. The company has acquired waterfront property on Westchester Creek, Bronx, and is said to be planning a new station here.

Harold Bergman, 441 Lexington Avenue, New York, architect, has plans for a two-story automobile service, repair and garage building, 75 x 200 ft., at 430-34 East Forty-eighth Street, to cost about $100,000 with equipment.

The Associated Gas & Electric Co., 61 Broadway, New York, is disposing of a bond issue of $14,000,000 a portion of the fund to be used for extensions and improvements, particularly in connection with the Staten Island Edison Corporation, a subsidiary, for power development and facilities to carry out a contract for furnishing service for the electrified lines of the Baltimore & Ohio Railroad, now nearly ready for service. The company has also acquired a controlling interest in the Manila Electric Corporation, Manila, P. I., and plans extensions.

The Remington Typewriter Co., 374 Broadway, New York, will soon ask bids for a four-story addition to its plant at Ilion, N. Y., 100 x 200 ft., estimated to cost $200,000, with machinery. Kinne & Frank, 7 Hopper Street, Utica, N. Y., are architects.

J. J. Curran, Long Island City, operating a machine shop at 39 Seventeenth Avenue, plans the purchase of a pipe-threading machine.

Missac Thompson, 200 Montague Street, Brooklyn, engineer, has completed plans for a four-story automobile service, garage and repair building, 75 x 100 ft., at 342-46 West Forty-first Street, New York, to cost approximately $96,000.

The Steiner Electric Co., 590 Northern Boulevard, Astoria, L. I., is asking bids on a general contract for a one-story addition to its factory at Long Island City, 25 x 55 ft., including improvements in the present structure, to cost about $55,000. John Baker, 4 Jackson Avenue, Long Island City is architect.

The Brooklyn Edison Co., Pearl and Willoughby Streets, Brooklyn, plans the installation of additional equipment at its Hudson Avenue steam-operated electric generating plant, including an 80,000-kw. turbo-generator and accessory equipment. The present capacity is 150,000 kw.; the ultimate output will approximate 700,000 hp. The comany has announced an expansion program to cost $20,000,000 during the year, including work now under way.

M. L. Reiser, 1677 Pitkin Avenue, Brooklyn, architect, has plans for a two-story automobile service, repair and garage building, 93 x 128 ft., at 208-14 Greenpoint Avenue, to cost approximately $60,000.

The A. H. Grebe Co., Van Wyck Boulevard, Richmond Hill, L. I., manufacturer of radio equipment and parts, has awarded a general contract to the Barney Ahlers Construction Co., 110 West Fortieth Street, New York, for a four-story addition, 65 x 80 ft., to cost $80,000. John Klabor, 101 Park Avenue, New York, is architect.

The New York Telephone Co., 15 Dey Street, New York, has awarded a general contract to the White Construction Co., 95 Madison Avenue, for a two-story and basement storage and distributing building, 200 x 250 ft., at Fulton Street and Van Sinderen Avenue, Brooklyn, with conveying, material-handling and other equipment, estimated to cost $600,000. McKenzie, Voorhees & Gmelin, 342 Madison Avenue, New York, are architects.

Charles Proescher, 84 Eighth Avenue, Long Island City, operating a sheet metal works, has awarded a general contract without competition to Otto W. Kritz, 301 Madison Avenue, New York, for a new three-story plant, 90 x 125 ft., to cost approximately $60,000. Jaros Kraus, 301 Madison Avenue, is architect.

The New York Edison Co., Irving Place and Fifteenth Street, New York, will proceed with the erection of its proposed seven-story, steam-operated electric generating plant at Fourteenth Street and the East River, 207 x 1100 ft., designed to be the largest station in the world of this character. Contract for the building has been let to the Kenn-Well Contracting Co., 45 East Seventeenth Street. It will have an ultimate capacity of 700,000 kw., comprising nine turbo-generating units, each of 60,000 kw. rating, and other generating apparatus. The initial installation will consist of two of these power units, to be ready for service

The Crane Market

INQUIRY for locomotive cranes continues light, but requests for prices on overhead cranes are in fair volume and some substantial awards are reported this week. One of the outstanding inquiries is from Dwight P. Robinson & Co. for the Mobile & Ohio Railroad, the list including one 180-ton, 7-motor, two 40-ton and two 15-ton electric cranes. Award of the contract of the Chesapeake & Ohio Railroad, involving a 15-ton electric, 10-ton hand power, 2-ton hand power mast jib crane, a 2-ton hand power wall crane and 28 1-ton chain blocks, is reported to have been made.

The Pittsburgh crane market has been featured by the award of a single order calling for 13 cranes for the Homestead works of the Carnegie Steel Co. New inquiries are not as numerous as in previous weeks.

Among recent purchases are:

Havana Central Railroad Co., 42 Broadway, New York, a standard ditcher for export to Cuba from the American Hoist & Derrick Co.

Atchison, Topeka & Santa Fe, Chicago, a standard ditcher from the American Hoist & Derrick Co.

D. W. Thurston Co., Detroit, two 30-ton locomotive cranes from the American Hoist & Derrick Co.

Southern Berkshire Cut Stone Co., New Marlborough, Mass., a 20-ton, 50-ft. boom, used Bucyrus locomotive crane from Philip T. King, New York.

City of Spokane, Wash., a 10-ton, 38-ft. span, hand power crane for the Department of Water Supply, from an Eastern builder.

Andes Copper Mining Co., 25 Broadway, New York, three 15-ton, two 10-ton and one 5-ton electric overhead cranes from Manning, Maxwell & Moore, Shaw Electric Crane works.

American Locomotive Co., Schenectady, N. Y., a 30-ton and 3-ton electric crane for the Schenectady plant and a 15-ton electric crane for the Dunkirk plant, from Manning, Maxwell & Moore, Shaw Electric Crane works.

American Steel Foundries, Granite City, Ill., a 10-ton, 75-ft. span gantry crane from Manning, Maxwell & Moore, Shaw Electric Crane works.

Ludlow Mfg. Associates, Ludlow, Mass., a 30-ton hand power crane from an unnamed builder.

West Virginia Pulp & Paper Co., New York, a 2-ton, 46-ft. span hand power crane from the Chisholm-Moore Mfg. Co.

West Penn Power Co., Pittsburgh, a 25-ton, 29-ft. 3-in. span, 3-motor crane from the Northern Engineering Works.

Carnegie Steel Co., Pittsburgh, for its Homestead works, twelve 20-ton, each with two 10-ton trolleys, and one 80-ton, 79-ft. span crane with 25-ton auxiliary, from the Morgan Engineering Co.

National Tube Co., Pittsburgh, for its Riverside works, Wheeling, W. Va., one 15-ton crane from Manning, Maxwell & Moore, Shaw Electric Crane works.

McClintic-Marshall Co., Pittsburgh, a 15-ton, 80-ft. span crane from the Harnischfeger Corporation.

Carnegie Steel Co., Pittsburgh, for its Homestead works, an 8-ton open-hearth charging machine from the Alliance Machine Co

General Electric Co., Schenectady, N. Y., a 10-ton, 55-ft. span, 4-motor and a 10-ton, 73-ft. span, 3-motor overhead cranes for West Philadelphia, from the Chesapeake Iron Works.

Grenci & Ellis, Poughkeepsie, N. Y., a 10-ton, 46-ft. 7-in. span overhead crane from the Lane Mfg. Co.

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next spring. Two 200-ton electric traveling cranes, and other smaller cranes and handling equipment will be installed. The complete project is reported to cost $50,000,000, to be finished in 1930.

Louis Sheinart, 194 Bowery, New York, architect, has plans for a four-story automobile service, repair and garage building, 75 x 100 ft., at 113-15 Chrystie Street, to cost $150,000 with equipment.

The Cassidy Co., 101 Park Avenue, New York, manufacturer of electric-lighting fixtures, is completing plans for the early erection of its proposed factory at Long Island City to cost $60,000 with equipment.

The Car Lighting & Power Co., Bayonne, N. J., manufacturer of electric-operated refrigerators, etc., is said to have negotiations under way for a merger with another company in this same branch of manufacture, name temporarily withheld, with intention of removing the local works to another location in the West, where capacity will be increased.

The Acme Handle Co., 220 Orient Street, Jersey City, N. J., is asking bids on a general contract for a new two-story factory, 100 x 100 ft., to cost about $35,000. John Armstrong, 36 Gautier Street, is architect.

The McIntire Corporation, 95 Oliver Street, Newark, N. J., manufacturer of electrical specialties, has purchased the plant, 74 x 205 ft., formerly used by the Franklin-Williams Co., brass founder and machinist, which it will equip for a new factory, providing considerable increase in output. Charles W. Yerbury is president and treasurer of the purchasing company, and Lester S. Dunn in charge of engineering.

The Pittsburgh Plate Glass Co., Frick Building, Pittsburgh, has awarded a general contract to Dwight P. Robinson, Inc., 125 East Forty-fifth Street, New York, for a five-story factory branch and distributing plant at the foot of Chester Avenue, Newark, N. J., 60 x 162 ft., to cost approximately $200,000 with equipment.

The Board of Commissioners, Municipal Building, Valley Road and Bloomfield Avenue, Montclair, N. J., is asking bids until June 9 for two motor-driven centrifugal sewage pumping units, with electric control apparatus and accessory equipment, for a proposed emergency pumping station on Willowdale Avenue. Metcalf & Eddy, 14 Beacon Street, Boston, are engineers.

The Board of Education, Westfield, N. J., plans the installation of manual training equipment in its proposed three-story junior high school estimated to cost $750,000, for which a general contract has been let to Thomas Day & Sons, Trenton, N. J. Wilder & White, 16 East Forty-first Street, New York, are architects.

The Gima Mfg. Co., 782 South Grove Street, Irvington, N. J., recently incorporated, has established a small factory and is manufacturing carburetor heaters. It also handles other lines. Edward Pfenningwerth is secretary.

The State Hospital Commission, Albany, N. Y., will receive bids until June 17 for one electric generator set, a.c., with accessory equipment (specification 4501); and one steel standpipe (specification 4513), for installation at the Willard State Hospital, Willard, N. Y. Sullivan W. Jones, Capitol Building, Albany, is State architect.

New England

BOSTON, June 1.

MACHINE tool business in this district the past week suffered a setback. Sales were few and for the most part confined to used equipment at low prices. The most important transaction reported was for five hammers to a Connecticut company. The hammers are of new design and weigh about three tons. Not only did sales fall off, but a decrease in new inquiries is also reported. Activities are confined to old prospects, which appear in no hurry to close. Although May was an unsatisfactory month with a majority of machine tool houses, sentiment in the trade is optimistic. Small tool sales are holding up remarkably well and machinery parts are in good demand.

The Walworth Mfg. Co., Boston, fittings, etc., has acquired the plant and business of the National Pipe & Foundry Co., Atalla, Ala., and will spend approximately $100,000 in improvements. The purchase and plant extensions it is reported involve $700,000. The company expects to have 800 at work by next January.

Tentative plans have been made for rebuilding the factory of the North Wayne Tool Co., North Wayne, Me., destroyed by fire May 25 with an estimated loss of $50,000.

Charles T. Main, 200 Devonshire Street, Boston, engineer, has plans for a $850,000 cotton yarn manufacturing plant, the Galves Cotton Mills, Galveston, Tex., having a capacity for 14,000 spindles. Motors, blowers, a small amount of metal-working and other equipment will be required.

The city of Keene, N. H., has asked for bids on a large school which will include a machine shop.

The Boston School Department has held up for the present its proposed trade school in Roxbury, for which McLaughlin & Burr, 88 Tremont Street, Boston, drew plans.

The Y. D. Service Garages, Inc., 345-7 Newbury Street, Boston, has taken bids on a general contract for a three-story addition, 55 x 112 ft., to its service, repair and garage building to cost $100,000. Provision has been made for the

erection of three additional floors later. L. S. Joslin, 339 Newbury Street, is architect.

The Eagle Lock Co., Terryville, Conn., is completing foundations and will soon begin superstructure for its proposed six-story addition, 60 x 250 ft., reported to cost $150,000.

The Horton Mfg. Co., Bristol, Conn., manufacturer of steel fishing rods, tackle, etc., has awarded a general contract to the Torrington Building Co., Torrington, Conn., for a one-story addition to cost $17,000.

The Torrington Mfg. Co., 70 Franklin Street, Torrington, Conn., manufacturer of special machinery, screw machine products, etc., has awarded a general contract to the Torrington Building Co., for a two-story addition, 60 x 100 ft., adjoining an extension recently completed, estimated to cost $40,000.

The International Harvester Co., 608 South Michigan Avenue, Chicago, has awarded a general contract to the Aberthaw Construction Co., 27 School Street, Boston, for its proposed four-story and basement factory branch and distributing plant, 100 x 140 ft., on North Beacon Street, Boston, to cost $100,000 with equipment.

Schoeck Brothers, Piedmont Street, Waterbury, Conn., sand and gravel operators, will proceed with the installation of a new screening plant at their sand and gravel properties, where a new plant has recently been established. Storage bins will also be built to provide for a capacity of about 100 tons.

The State Legislature, Hartford, Conn., has approved an appropriation of $25,000 for enlargement of the power plant at the State training school, Mansfield, including the installation of additional equipment.

The Greenfield Electric Light & Power Co., Greenfield, Mass., will issue preferred stock for $175,000, the proceeds to be used for extensions and improvements. The company operates a hydroelectric power plant at Shelbourne Falls.

The Mexican Petroleum Corporation, Chelsea, Boston, has filed plans for an addition to its storage and distributing plant to cost $70,000 with equipment.

The Dennison Mfg. Co., Framingham, Mass., manufacturer of paper specialities, has plans for a two-story addition, 60 x 125 ft., to cost $75,000 with equipment. Bigelow & Wadsworth, 3 Hamilton Place, Boston, are architects.

The Safety Service Corporation, Bridgeport, Conn., has been organized to operate a chain of Raybestos brake service stations. W. B. Spencer is president.

Philadelphia

PHILADELPHIA, June 1.

BIDS on a general contract have been asked by the Pringle Electric Mfg. Co., 1906-12 North Sixth Street, Philadelphia, manufacturer of electrical equipment, for an addition to cost about $50,000. Stuckert & Co., Crozier Building, are architects.

Frank Clark, 23 South Sixteenth Street, Philadelphia, architect, will erect a two-story automobile service, repair and garage building, 80 x 80 ft., to cost about $55,000.

The Sun Oil Co., Finance Building, Philadelphia, is disposing of a stock issue to total $5,767,000, a portion of the proceeds to be used for extensions and betterments in plants and properties. The company operates three refineries with rated capacity for handling 25,000 bbl. of oil per day.

The General Electric Co., Witherspoon Building, Philadelphia, has awarded a general contract to the Turner Construction Co. for additions to building No. 4, at its plant at Elmwood Avenue, Sixty-eighth to Seventieth Streets, one-story, 120 x 250 ft., with wing extensions, 25 x 140 ft., and 80 x 231 ft., and train shed, 15 x 250 ft., to cost in excess of $200,000. Harris & Richards, Drexel Building, are architects.

The City Council, Camden, N. J., will receive bids until June 11 for the electrification of the municipal waterworks, including motor-operated pumping machinery and other equipment, estimated to cost $300,000.

G. S. Getty & Co., 1539 Cabot Street, Philadelphia, manufacturers of hardware, will erect a two-story addition, 40 x 80 ft., to cost $27,000.

The Lehigh Coal & Navigation Co., 437 Chestnut Street, Philadelphia, has construction under way on a new coal breaker to handle the output of its Nos. 4, 5 and 6 mines at Lansford, Pa. The machinery will be electrically-operated, with rotary dumps, concentrating tables, classifiers, etc. The structure will cost close to $2,000,000, and is expected to be ready for service in the fall.

The Southern Pennsylvania Power Co., Oxford, Pa., is disposing of a bond issue of $1,200,000, a portion of the fund to be used for extensions and improvements.

The White Construction Co., 1015 Chestnut Street, Philadelphia, has secured a contract for a four-story automobile service, repair and garage building, 100 x 120 ft., at Scranton, Pa., estimated to cost $350,000 with equipment, for which plans were drawn by Lester Davis, 616 Spruce Street, Scranton, architect.

The Viscose Co. of America, Inc., Marcus Hook, Pa., has plans nearing completion for a one-story machine and wood-working shop, 110 x 150 ft., at its artificial silk mill. The Ballinger Co., Twelfth and Chestnut Streets, Philadelphia, is architect.

Fire, May 22, destroyed a portion of the steam power plant at the slate quarry of the M. L. Tinsman Co., Windgap, Pa., with loss estimated at $20,000, including equipment. It is planned to rebuild.

The Board of Education, Wayne, Pa., plans the installation of manual training equipment in its proposed two-story high school, estimated to cost $175,000, for which a general contract has been let to the Charles McCaul Co., 1713 Sansom Street, Philadelphia. I. T. Catharine, Nineteenth and Ludlow Streets, Philadelphia, is architect.

The Shamokin Coal Co., Shamokin, Pa., has plans for the construction of a new coal breaker at its Nelson anthracite shaft, estimated to cost $500,000 with machienry.

The National Public Service Corporation, New York, operated by A. E. Fitkin & Co., 165 Broadway, is disposing of a bond issue of $4,500,000, the proceeds to be used for the purchase of a controlling interest in the Municipal Service Co., operating properties in eastern Pennsylvania, and for extensions and improvements in plants and systems of acquired companies.

The Board of Education, West Pittston School District, West Pittston, Pa., plans the installation of a manual training department in its proposed two-story and basement high school, estimated to cost $175,000, for which plans are being prepared by Mack & Sahm, Coal Exchange Building, Wilkes-Barre, Pa., architects.

The Paul E. Wirt Fountain Pen Co., Bloomsburg, Pa., has been formed under Delaware laws with capital of $125,000 to take over the local plant of the company of the same name, recently acquired by Robert H. Knorr and Boyd F. Maize, who will head the new organization. Plans are under way for extensions and equipment installation.

S. Hopkins, Sixty-Second and Market Streets, Philadelphia, has taken out a permit to erect a two-story automobile service, repair and garage building, 50 x 220 ft., to cost about $65,000.

The Lehigh Valley Railroad Co., Lehighton, Pa., will make extensions and improvements in its local engine house and shop, including the erection of a roundhouse addition. Work is in progress on new repair shops at Packerton, Pa., to be ready for service in the near future.

The E. & G. Brooke Iron Co., Birdsboro, Pa., is inquiring for a McCarthy 18- or 20-in. equalizing valve and a drop valve of the same description.

Pittsburgh

PITTSBURGH, June 1.

MACHINE tool business generally is fair, with sales still running best in special, as distinct from standard tools. Most of the new inquiries call for single tools and are quite numerous. The Youngstown Sheet & Tube Co. is in the market for a sheet bar shear, complete with pilot, table and gage, for its Indiana Harbor plant. The National Tube Co. is a recent purchaser of a 42-in. lathe for its National works at McKeesport.

Arrangements have been completed by the Guarantee Liquid Measure Co., Rochester, Pa., manufacturer of visible pumping equipment, for the purchase of the Marvel Equipment Co., Cleveland, manufacturer of kindred apparatus. It will be operated as a branch organization. Extensions are planned.

The West Penn Power Co., West Penn Building, Pittsburgh, will proceed with the construction of a series of power dams on the Cheat River, near Cheat Haven, Pa., for hydroelectric power development. The initial plant will have a capacity of about 90,000 hp., and is expected to be ready for service next year. The ultimate development will approximate 500,000 hp., divided into a number of hydroelectric power stations.

The Colonn Mfg. Co., Vandergrift Building, Pittsburgh, manufacturer of steam fittings, plumbers' equipment and supplies, will ask bids within a few weeks for a one-story addition to its plant at Monaca, Pa., 80 x 175 ft., estimated

to cost $100,000 with equipment. R. F. Maury is company engineer.

Anderson & Blatt, Grove City, Pa., lumber operators, are planning the installation of a new saw mill and lumber plant on their properties in Holmes and Coshocton Counties, Ohio, to cost $45,000 with machinery, conveying apparatus, etc.

The Winding Gulf Colliery Co., Winding Gulf, W. Va., is said to have plans under advisement for the reconstruction of its tipple at Mine No. 1, to include the installation of new screening apparatus, air-cleaning equipment, etc.

The Wilson Sand & Supply Co., Huntington, W. Va., has applied for permission to construct a new sand and gravel plant on the bank of the Ohio River at Kenova, W. Va., to include the installation of hoisting, conveying, loading and other mechanical-handling equipment, storage bins and miscellaneous buildings.

E. H. Morford & Co., Moore Building, Charleston, W. Va., has inquiries out for an electric generator set, about 100 kw. capacity, with switchboard, instruments and accessories.

The West Virginia Coal & Coke Co., Elkins and Fairmont, W. Va., has acquired an interest in the Logan Dock Co., Huntington, W. Va., and is said to be planning for expansion in mines and shipping facilities, to include a tipple; loading, hoisting, conveyng and kindred equipment; steel river barges, and other equipment, expected to cost more than $500,000. Brooks Hutchinson, Fairmont, is vice-president.

W. E. Harris, Room 912, First National Bank Building, Huntington, W. Va., has inquiries out for a jaw crusher, about 9 x 1 in.

The Pittsburgh Plate Glass Co., Frick Building, Pittsburgh, is contemplating extensions and improvements in its Norwood plant at Clarksburg, W. Va., including the installation of additional equipment, estimated to cost $100,000. Work will begin during the summer.

The Ramey Tool Mfg. Co., Grove City, Pa., has broken ground for two-story addition, 50 x 55 ft., for which some equipment will be required.

A manual training department will be installed by the Board of Education, Erie, Pa., in connection with a new junior high school to cost $840,000. Bids are being received on a general contract until July 9. R. S. Scobell is business manager of the board.

The Hammermill Paper Co., Erie, Pa., Ernst R. Behrend, president, has acquired 43 acres on the East Lake Road for extensions.

Buffalo

BUFFALO, June 1.

CONTRACT has been let by the Syracuse Stamping Co., 423 South West Street, Syracuse, N. Y., to Dawson Brothers, Union Building, for a one-story and basement addition, 60 x 165 ft.

The Plastergon Wall Board Co., 190-98 Philadelphia Street, Buffalo, manufacturer of composition pulp board products, has filed plans for an addition, to replace the portion of the works destroyed by fire several weeks ago. It will cost approximately $50,000.

The Board of Education, Phoenix, N. Y., is considering the installation of manual training equipment in its two-story and basement high school, estimated to cost $175,000, for which bids will be asked soon. Melvin King, Snow Building, Syracuse, is architect.

The Syracuse Lighting Co., Inc., Syracuse, N. Y., is arranging for the sale of a block of preferred stock, a portion of the proceeds to be used for extensions and improvements in power plant and system. The company will increase its service to West Monroe, Hastings and other points.

Fire, May 26, destroyed a portion of the nickel-plating department at the three-story plant of the Buffalo Dental Mfg. Co., 145 Kehr Street, Buffalo, manufacturer of dental instruments, etc., with loss estimated at $25,000. It is planned to rebuild.

Plans are being arranged for a merger of electric light and power companies in the central New York district, to be known as the Mohawk & Hudson Power Corporation. Officials of the present companies will head the new organization, which plans extensions. The Northern New York Utilities, Inc., Watertown, is interested in the consolidation, and has plans under way for the construction of a steel tower transmission line from its plant on Black River to Taylorville, N. Y., 27 miles, estimated to cost $500,000.

The Board of Education, Franklinville, N. Y., plans the installation of manual training equipment in its proposed two-story high and grade school, estimated to cost $225,000, for which bids are being asked on a general contract. Martin C. Miller, 70 West Chippewa Street, Buffalo, is architect.

The Chautauqua Cabinet Co., Mayville, N. Y., has work in progress on an addition to cost $45,000 including equipment.

The Electrical Industrial Laboratories, Inc., care of George F. Seymour, Jr., 20 Clinton Street, Newark, N. J., recently incorporated with $100,000 capital stock, will manufacture electrical equipment, but is not yet in position to announce plans.

The North East Electric Co., Rochester, N. Y., is in the market for new or used tote pans, about 12 in. x 20 in. x 6 in. deep. A. M. Anderson is purchasing agent.

A 30-acre site at Bristol, Pa., has been acquired by the Huff-Daland Corporation, Ogdensburg, N. Y., manufacturer of airplanes and kindred equipment, where it is planned to erect a factory. Details are not yet available.

Fire, May 27, destroyed the plant and equipment of the Robinson Knife Mfg. Co., Cuba, N. Y., with a loss of $25,000. Plans for rebuilding and the installation of new machinery are under consideration.

The Precision Engineering Co., Inc., Steele Street and Harding Avenue, Jamestown, N. Y., has been awarded contract for the manufacture of couplers for the Thomas Flexible Coupler Co., Warren, Pa., totaling $1,000,000. New and special machinery will be installed immediately. Ralph M. Buck heads the Jamestown company.

South Atlantic States

BALTIMORE, June 1.

A COMPANY is being formed by Alva W. Voyce, Alburtus, Md., with capital of $250,000, to construct a plant for the manufacture of brick, tile and kindred products estimated to cost $150,000 with machinery. The works will include a power house and machine shop. Others interested in the new company are Winfield S. Cahill and Thomas E. Carson.

W. I. Anderson & Co., 213 East Washington Street, Greensboro, N. C., are arranging for the erection of a new cold storage and refrigerating plant estimated to cost $60,000 with equipment.

The Pioneer Hardwood Flooring Co., Ashland Avenue, Orangeville, Baltimore, is said to have preliminary plans for a one and two-story factory to replace the portion of its works recently destroyed by fire, with loss of about $125,000 including machinery. Charles Steiner heads the company.

J. F. Hakes & Co., 43 South Gay Street, Baltimore, metal products, have inquiries out for a motor-driven power hammer.

The Pepperton Cotton Mills, Jackson, Ga., have preliminary plans for a one-story steam-operated power plant. Lockwood, Greene & Co., Atlanta, Ga., is architect and enineer.

The Drexel Furniture Co., Morganton, N. C., has awarded a general contract to the Devitt-Fleming Co., Chattanooga, Tenn., for a new two-story plant, 76 x 420 ft., to cost about $75,000 with equipment. A. M. Kistler is president.

W. H. Bradley Co., Room 219, Grant Building, Atlanta, Ga., is in the market for a track-laying machine, Clyde or Bell type.

The Allied Packers, Inc., Macon, Ga., will convert the former plant of the Macon Packing Co. for a cold storage and refrigerating plant. Equipment will be electrically-operated. The work will cost close to $40,000.

Fire, May 24, damaged a portion of the four-story plant of the Gandy Belting Co., 207-11 West Redwood Street, Baltimore, manufacturer of mechanical belting. An official estimate of loss has not been announced. It is planned to rebuild.

The Screven Oil Mill Co., Sylvania, Ga., has inquiries out for a full or semi-full type Diesel oil engine, about 75 hp. capacity; one air compressor, capacity about 125 cu. ft. of air per min., and two horizontal return tubular boilers, 72-in. x 18-ft. long, to operate under 150 lb. working pressure, with accessory equipment. W. E. Hudson is president.

The City Council, Pulaski, Va., plans the installation of pumping equipment in connection with proposed extensions and improvements in the municipal waterworks estimated to cost $175,000. Bonds will soon be voted.

The Blue Ridge Power Co., 144 East Fair Street, Spartanburg, S. C., will soon begin the construction of its proposed hydroelectric generating plant on the Green River, near Saluda, S. C., to cost $300,000 with equipment. A

transmission line will be built from the station to Spartanburg, Huntington and vicinity.

The Board of Education, Durham, N. C., is considering the installation of manual training equipment in its proposed three-story junior high school, estimated to cost $125,000, for which bids will be asked on a general contract at an early date. Milburn-Heister & Co., First National Bank Building, is architect.

The May Oil Burner Corporation, 602 North Howard Street, Baltimore, Edwin Fleischman, president, has taken over a building at Winchester and Carey Streets for the establishment of a local plant. It has been operating a factory at Flushing, L. I., and will remove this works to the new location, providing additional equipment.

The Sydnor Pump & Well Co., Inc., 1310 East Main Street, Richmond, Va., is planning to purchase a fuel oil engine, about 20-hp. capacity, with fuel tank and accessory equipment,.

The Wilson-Hock Co., City Point, Va., machinery dealer, has inquiries out for a boiler feed horizontal duplex pump, 12 x 8½ x 12 in.; a conveyor belt, about 200 ft. long, with roller conveyor apparatus, 18 to 20 in. wide; 100-kw. a.c. or d.c. electric generator, with one 50-hp. and one 75-hp. motors; one 100-hp. oil engine direct-connected to three-phase, 60-cycle, 2300-volt generator; several transformers, 1 to 20-kva. capacity, 60-cycle, 220-volt high tension; 30-hp. electric-operated hoist, with motor 500-volt, d.c., and about 700 ft. of cable, and a quantity of transmission line equipment.

The Board of Commissioners, District of Columbia, Washington, is asking bids until June 20 for one electric drill, six machinists' benches, 20 woodworkers' benches, six electric soldering irons, and two watthour meters; until June 15 for gate valves for the water department.

The Georgia Railway & Power Co., Atlanta, Ga., will issue stock for $4,000,000, a portion of the fund to be used for proposed extensions and improvements in power plants and system.

The Savannah Electric & Power Co., Savannah, Ga., has plans for an addition to its steam-operated Riverside power house to cost approximately $150,000 with equipment. H. C. Foss is president.

R. D. Elliott, Hertford, N. C., and associates are arranging for the construction of a one-story cold storage and refrigerating plant at Kitty Hawk, N. C., with crude oil engine as prime mover, estimated to cost $45,000 with equipment.

The Chesapeake & Ohio Railway Co., Roanoke, Va., has plans for a one-story locomotive boiler shop, 140 x 400 ft., with 50-ft. wide machine shop bay, at its repair works at Huntington, W. Va. The installation will include three electric traveling cranes, one of 50-tons capacity, and two 15 tons each. It is expected to ask bids on a lump sum for the entire job. C. W. Johns is chief engineer.

Cleveland

CLEVELAND, June 1.

MACHINE tool business was much more active the past week. Several inquiries developed from Detroit automobile companies for single purpose production machines. The Hudson Motor Car Co. is inquiring for eight or 10 special milling machines, the Cadillac Motor Car Co. for several grinding machines and the Chevrolet Motor Co. for about a dozen automatic screw and cutting off machines. The Ford Motor Co. inquired for four 36-in. planers, two of which were placed with a local dealer. The National Cash Register Co., Dayton, Ohio, purchased 10 turret lathes and the Detroit Lubricator Co., Detroit, eight turret lathes, both going to a Cleveland manufacturer. Some local machine tool manufacturers report a slight improvement in sales in May over April and with considerable business in prospect indications are that June will show up fully as well as May.

The Cleveland market is quiet, but a fair volume of business is coming from northern Ohio, particularly from the rubber companies and allied industries at Akron. It is reported that the Timken Roller Bearing Co. will shortly purchase some additional equipment because of its acquisition of the plant and business of the Gilliam Mfg. Co.

The Wellman-Seaver-Morgan Co., Cleveland, has taken a contract for two bucket handling bridge cranes for the Anglo-Chilian Consolidated Nitrate Corporation for its mines in Chile, also an order from the Pittsburgh Plate Glass Co. for eight gas producers, and from the Newton Steel Co., Newton Falls, Ohio, for ten gas producers.

The Steel Cross Arm & Cable Equipment Co., Defiance, Ohio, has been organized to manufacture steel top arm extensions for telegraph poles, steel cross arms, cable racks and other equipment to be used in the place of wood for supporting wires and cables. Sidney Thompson, president Defiance Screw Machine Products Co., is president; Myron C. Sherman, Defiance, vice-president; Adolph A. Seegar, Toledo, treasurer, and Carl Richards, Toledo, secretary. The company has a capital stock of $50,000. The product has been made under contract for a short time in Toledo. A new plant will be erected, but as yet there has been no decision on a site.

Alfred W. Reiser, 129 Huron Street, Toledo, Ohio, is taking bids on a three-story and basement building, 40 x 100 ft., for the manufacture of electric fixtures.

The Fyr-Fytor Co., Dayton, Ohio, has placed contract for a two-story factory, 66 x 74 ft., for the manufacture of fire extinguishers.

The Perfeclite Co., East Fortieth Street, Cleveland, has awarded a general contract to Jacob Meckler, 9602 Adams Avenue, for a two-story and basement building, 65 x 140 ft. for the manufacture of electrical fixtures.

Manual training departments will be provided in the following schools for which bids are being taken or contracts have been placed: Beehive school Warrensville, Ohio, William F. Malchus, clerk of the Board of Education; high school, Clarington, Ohio, B. E. Kelch, clerk of the Board of Education; centralized high school, Shawnee Township, Allen County, Ohio, E. E. Clem, Lima, clerk of the Board of Education.

Erection of a new plant for the Superior Bronze & Aluminum Co., Warren, Ohio, has begun. It will be 40 x 120 ft., of cinder block and steel construction and will be equipped with new machinery for brass and aluminum casting. The investment will be about $10,000, Arthur J. Gilmore is president and general manager.

The Schaff & Good Co., Fremont, Ohio, manufacturer of cutlery, is considering rebuilding the portion of its plant destroyed by fire May 22, with loss of $60,000 including equipment.

The Patterson Foundry & Machine Co., East Liverpool, Ohio, is inquiring for a new or used 24-in. shaper.

Fire destroyed plant No. 1 of the East Ohio Sewer Pipe Co., Irondale, Ohio, on May 10. Estimated loss was $150,000. Plans for rebuilding will be held in abeyance.

Cincinnati

CINCINNATI, June 1.

LOCAL machine tool manufacturers report that May was one of the best months of the year. A considerable number of plants are still operating on a greatly reduced schedule, but the larger builders have been running at a fairly good rate. Sales executives have been figuring on business involving many thousands of dollars. Railroads continue to postpone closing on lists that have been out for some time. Detroit automobile manufacturers have placed business here in the past two weeks, most of the machines being for replacement. The foreign field continues to yield a gradually increasing number of orders.

The Chrysler Motor Corporation, Detroit, has purchased shapers for its Newcastle, Ind., plant. A local manufacturer sold a shaper this week to a Central American company. The Cincinnati Shaper Co. booked an order for an all steel press brake from the American Body Co., Buffalo. Planer manufacturers report that business has improved. Several good orders for boring mills have been received. The Cincinnati Planer Co. sold an 8-ft. boring mill to a local manufacturer. Sales of lathes are fair. Drilling machinery demand is spotty. One manufacturer has just shipped a machine to Brazil and another to the Florida East Coast Railway. Machinery dealers state that sales have been fair and inquiries are reported better.

The American Products Co., Cincinnati, manufacturer of food products and toilet preparations, has begun construction of a new plant at Colerain Avenue and Monmouth Street, Cincinnati. It will expend approximately $125,000 for equipment and is in the market for conveying machinery, elevators, soap-making machinery and equipment for its machine shop. Dr. R. L. Flett is vice-president and general manager.

The Kodel Radio Corporation, Cincinnati, has purchased the Mattman & Sinclair Air-O-Meter Co., Cincinnati, manufacturer of automatic air-pressure tire gages for gasoline filling stations. The business will be moved to the new plant.

The Louisville Gas & Electric Co., Louisville, is disposing of a stock issue of $11,900,000, a portion of the proceeds to be used for extensions in electric power plants and system. The company is owned by the Standard Gas & Electric Co., operated by the Byllesby Engineering & Management Corporation, Chicago.

The City Council, Marion, Ky., is asking bids until June 11 for one 150,000-gal. steel water tank on 116-ft. steel tower, and other equipment for the municipal waterworks. H. K. Bell, Hernando Building, Lexington, Ky., is engineer.

The Chattanooga Implement Mfg. Co., Chattanooga, Tenn., manufacturer of agricultural implements, is arranging for additions to cost approximately $200,000 with equipment.

The Mills Equipment Co., Chattanooga, Tenn., has inquiries out for a steam shovel, crawler type, about ¾-yd. capacity.

The Tennessee Electric Power Co., Chattanooga, Tenn., has an expansion program requiring about $6,000,000 in expenditures during the present year, including work now under way. The projects will include an auxiliary steam-operated electric power plant at Hale's Bar, and a hydroelectric power development on the Okoee River.

The Tennessee Stove Works, Inc., Chattanooga, Tenn., is said to be completing plans for its proposed addition, primarily for the production of gas stoves, to cost $65,000.

The L. J. Breed Equipment Co., James Building, Chattanooga, Tenn., has inquiries out for a 100-ft. steel guyed derrick, about 50 tons capacity; one steam-driven air compressor, capacity about 200 cu. ft. per min.; one three-drum electric hoist, with swinger to operate stiff-leg derrick, 60 to 80-ft. boom, with clamshell bucket about 1-yd. capacity, and pressing, refining and accessory equipment for a cottonseed oil mill.

The Paducah Water Co., Paducah, Ky., is said to be considering the installation of pumping equipment in connection with proposed extensions and betterments in its waterworks, estimated to cost $300,000 with machinery.

The Tennessee Coffin & Casket Co., Chattanooga, Tenn., will make extensions and improvements in its plant to cost in excess of $55,000.

The R. R. Ogilvie Co., Fourth National Bank Building, Nashville, Tenn., has inquiries out for woodworking machinery, including a combined tongue, groove and planer machine, turning lathe, and other tools.

Max L. Israel of the Max L. Israel Co., East Monument Avenue, Dayton, Ohio, has organized the Builders Structural Steel Co. to handle building materials, structural steel, and reinforcing materials. Machinery is being installed for the fabrication of steel. The new company was formed to separate the building and structural steel department from the general business.

The Kinnear Mfg. Co., Columbus, Ohio, has been organized to manufacture steel rolling doors, shutters, etc. It is in production. Boyd Cherry is secretary.

Indiana

INDIANAPOLIS, June 1.

THE Ames Shovel & Tool Co., North Anderson Street, Anderson, Ind., is planning a one-story addition, to cost approximately $50,000 with equipment. Headquarters of the company are in the Ames Building, Boston.

Preliminary plans are being considered by Innis, Pearce & Co., West Seventh Street, Rushville, Ind., for a one-story veneer mill to cost $35,000 with machinery.

Fire, May 22, destroyed a portion of the plant of the John Obrecht Sons' Mfg. Co., Tell City, Ind., manufacturer of hub blocks for wheels, porch furniture and kindred wood products, with loss of $100,000 including machinery. Plans for rebuilding are as yet undetermined. Adolph Obrecht is president.

The Northern Indiana Gas & Electric Co., Hammond, Ind., has filed plans for a one-story building at 261 Sheffield Avenue, to be equipped as a meter shop, for repairs, parts manufacture, etc.

The Terre Haute, Indianapolis & Eastern Traction Co., Tribune Building, Terre Haute, Ind., will soon take bids for its proposed one and two-story car barns and shops, 50 x 250 ft., to replace buildings destroyed by fire several months ago, estimated to cost $200,000 with equipment. Shourds & Stoner, Tribune Building, are architects.

The Chicago Sewer Pipe Co., Brazil, Ind., manufacturer of vitrified sewer pipe, etc., plans to rebuild the portion of its works destroyed by fire May 27, with loss estimated at $200,000 including machinery and stock. The company is operated by the Chicago Fire Brick Co., 133 West Washington Street, Chicago. W. J. Gilbert is president.

The School Board of Clear Creek Township, Huntington County, Ind., Harvey E. Craig, Huntington, Ind., trustee, has authorized the installation of manual training equipment in its proposed two-story and basement grade and high school, to cost $85,000. Griffith & Goodrich, 211 East Berry Street, Fort Wayne, Ind., are architects.

The DeKalb Furniture Co., Auburn, Ind., has authorized plans for five one-story units, each about 40 x 80 ft., to replace the portion of its plant recently destroyed by fire with loss estimated at $75,000. Woodworking machinery to be installed will be electrically-operated.

Willard Ellwood, Christman Building, South Bend, Ind., architect, has plans for a two-story automobile service, repair and garage building, to cost $65,000.

The Red Ball Transit Co., Merchants' Bank Building, Indianapolis, has plans for a four-story and basement service, repair and garage building for company motor buses, to cost approximately $200,000. Vonnegut, Bohn & Mueller, Indiana Trust Building, are architects.

Chicago

CHICAGO, JUNE 1.

THE Illinois Central has closed for part of its pending equipment with the likelihood that it will complete purchases against its Markham Yards, Chicago, list and a portion of its general budget requirements early this week. The Santa Fe is also expected to take action on its extensive inquiries soon. The Chicago, Burlington & Quincy has added eight items to its pending list, while the Rock Island lines have asked for figures on a motor-driven four-spindle drilling machine for drilling and reaming locomotive boiler flue sheets and the Santa Fe has put out an inquiry for a 2-in. Landis, or equivalent, motor-driven double-head heavy-duty bolt cutter. That the Illinois Steel Co. will go ahead with the remodeling of its rail mill at Gary, Ind., is indicated by the fact that it has placed orders for 14 rail drills.

The Nash Motors Co., Kenosha, Wis., has closed for four large milling machines, including a 128-in. drum-type, and two special milling machines. The Rockford, Ill., board of education has placed orders against its list of 21 machine tools, including 14 engine lathes. The Wilde Co., Peoria, Ill., manufacturer of domestic oil burners, which placed considerable equipment about a month ago, has put out tentative inquiries for additional tools. There is considerable scattered demand for used machine tools. The National Fireproofing Co., Ottawa, Ill., is in the market for a half-dozen used machines to equip a repair shop which will replace a building recently destroyed by fire. Machine tool sales in May were not equal to those in April, and by some dealers the month just closed is described as poor.

Additions to Burlington List
(All machines to be motor-driven)

One Landis, or equivalent, triple head bolt threader with ½ to 2½-in. capacity.
One Landis, or equivalent, 2½-in. double head threading machine with standard equipment from ½ to 2½ in.
One 32-in. high duty shaper.
Two No. 2½ Barnes, or equivalent, upright drills.
One 24-in. heavy-duty geared head engine lathe, 6 ft. between centers.
One 54-in. vertical turret lathe.
One Hilles & Jones, or equivalent, No. 0 power bending roll.

Demand for steam and board drop hammers is heavy and some manufacturers are operating full. The Chambersburg Engineering Co., Chambersburg, Pa., has recently taken the following orders: A 3500-lb. and a 2750-lb. board drop hammer for the Great Lakes Forge Co., Chicago; two 1500-lb. board drop hammers for the American Forge & Socket Co., Pontiac, Mich.; a double-end mounting and demounting wheel press and a 300-ton hydraulic press for the Cheyenne, Wyo., shops of the Union Pacific; a 12,000-lb. double frame steam hammer for the West Lynn, Mass., shops of the General Electric Co.; a 12,000-lb. double frame steam hammer for the Schenectady, N. Y., plant of the American Locomotive Co.; a double-end mounting and demounting wheel press for the Norfolk, Va., shops of the Chesapeake & Ohio.

The Globe Co., 824 West Thirty-sixth Street, Chicago, has awarded contract for a one-story sheet metal works, 65 x 70 ft., to cost $10,000.

The I. J. Gross Noodle Co., 327 East 59th Street, Chicago, has let contracts for a one-story factory, 60 x 120-ft., at 6021-23 Wentworth Avenue, to cost $17,000.

Reliable Trucks, Inc., 3913-27 South Michigan Avenue, Chicago, recently granted a charter, has purchased the Old Reliable Truck Corporation and will continue the manufacture of the "Old Reliable" truck in the plant occupied by that company. Metal-working equipment is sufficient for present needs. Officers are: President and treasurer, Theodore Friedeberg; vice-president, Fred Bernstein; secretary and general manager, Alfred O. Hoyt.

The Kansas City Smelting Co., Guinotte and Park Avenues, Kansas City, Mo., is constructing an addition and will add lead pipe, wire solder and triangular bars to its products. Heretofore it has made only bar solder, type metal and machinery babbitt.

The General Radiator Co., 547 West Jackson Boulevard, Chicago, manufacturer of automobile radiators and automobile parts, has preliminary plans for a new two-story and basement E-shaped plant at Quincy, Ill., 60 x 465 x 350 x 359 ft., to cost $400,000 with machinery. C. W. Gillett is chairman of the board.

The Minnesota Power & Light Co., Duluth, Minn., is disposing of a bond issue of $3,500,000, a portion of the proceeds to be used for extensions in power plants and system.

The Motor Power Equipment Co., 2512 University Avenue, St. Paul, Minn., has tentative plans for a two-story factory on the Ford Road, 150 x 300 ft., to cost approximately $100,000 with equipment. C. H. Johnson, Capitol Bank Building, is architect. W. W. Logan is vice-president.

Fire, May 22, destroyed a portion of the plant of the Newell Construction & Machine Co., 535 H Street, Cedar Rapids, Iowa, with loss estimated at $60,000 with equipment. It is planned to rebuild.

The Interstate Power Co., Dubuque, Iowa, is planning the sale of a block of preferred stock, totaling about 30,000 shares, the proceeds to be used for enlargements in its local power plant; with the installation of additional machinery, and for the construction of a new steam-operated electric generating station at Clinton, Iowa.

The Intersectional Realty Co., 816 Second Avenue, Minneapolis, Minn., has awarded a contract to the James Beck Co., 211 South Eleventh Street, for a one-story and basement steam-electric power plant at Seventh Street and Second Avenue, to cost about $100,000 with equipment. Larson & McLaren, 816 Second Avenue, are architects.

The Colorado Refining Co., Fort Collins, Colo., is reported to be planning the construction of a new oil refinery to cost $175,000 with equipment.

The Elgin Wind Power & Pump Co., 75 North State Street, Elgin, Ill., will soon take bids on a general contract for a three-story and basement addition, 36 x 48 ft., to cost $35,000 with equipment. August E. Johnson is company architect. George M. Peck is president.

The Northeastern Iowa Power Co., Clermont, Iowa, has plans for a new power house at Mitchell, Iowa, to cost approximately $225,000 with equipment.

The Reese Metal Weather Strip Co., 206 South Tenth Street, Minneapolis, recently incorporated with $50,000 capital stock, will assume the assets of an established business, manufacturing a complete line of metal weather strips. Additional equipment is being installed. The company's material requirements include zinc, copper and bronze in sheets and coils. Frank Reese is head of the company.

The Diamond Steel Products Co., 1414 Marshall Street, Northeast, Minneapolis, is in the market for 20 1¼-in. or 1½-in. model B Cleveland automatics.

The All-Purpose Lawn Sprinkler Co., 1513 Stout Street, Denver, recently incorporated, is engaged in manufacturing brass lawn sprinklers. The company operates an assembling plant, but parts are made by contract. It is in position to receive estimates on brass and also will receive bids from plants equipped to manufacture this line. Considerable expansion is being planned. William A. Shaw is one of the heads.

The XL Cast Iron Smoke Pipe Co., 2127 Lafayette Street, Waterloo, Iowa, recently organized with $25,000 capital stock to manufacture cast iron smoke pipe. It also plans to make cost iron hog troughs, cistern rings and covers. Later it may manufacture hardware and plumbing lines. The company already is in operation and will do general foundry job work. E. H. Matthias is president and A. C. Anderson, vice-president in charge of the foundry.

St. Louis

ST. LOUIS, June 1.

PLANS are being completed by the Kansas City Smelting Co., Park Street, Kansas City, Mo., for a one-story addition to its works for the production of triangular reinforcing bars, lead pipe and kindred products to cost $50,000.

IN the General Electric Plant at Bloomfield, N. J., There Are Three Girls Engaged in Welding Compensator Oil Boxes. The foreman in charge of the work claims the girls are as good workers as men.

Fire, May 23, destroyed the plant of the Smith-Davis Mining Co., Cardin, Okla., with loss reported at close to $100,000 including machinery. Rebuilding plans are under consideration.

The Common Council, Eufaula, Okla., plans the installation of pumping machinery in connection with a proposed waterworks system estimated to cost $25,000.

Officials of the Moon Motor Car Co., 4400 North Main Street, St. Louis, have organized a subsidiary to be known as the Diana Motors Co., to operate in conjunction with the proposed eight-cylinder automobile to be manufactured, which will be known as the Diana automobile. Stuart McDonald heads both companies.

The Guthrie Cotton Oil Co., Guthrie, Okla., is said to have preliminary plans for rebuilding the portion of its mill destroyed by fire, May 20, with loss approximating $50,000 including equipment.

The Hoffman Arms Co., 1763 East Twenty-seventh Street, Cleveland, has completed plans for a new factory at Ardmore, Okla., for the manufacture of firearms, to be one-story, 60 x 220 ft., estimated to cost $35,000. The company purposes to remove its Cleveland business to this location, providing additional equipment for increased output.

The Board of Education, Fort Scott, Kan., plans the installation of manual training equipment in its proposed two-story and basement junior high school estimated to cost $200,000, for which preliminary plans are being drawn by C. A. Smith, Finance Building, Kansas City, Mo., architect.

The Common Council, Newark, Ark., is contemplating the erection of a municipal electric lighting plant estimated to cost $25,000. E. H. Glenn, Batesville, Ark., is engineer.

The Sindahl Petroleum Co., 114 West Seventh Street, Oklahoma City, Okla., contemplates the purchase of pumping equipment for a local storage and distributing plant. It will also purchase an oil derrick, cables, tanks, pipe and auxiliary equipment.

Ovens, conveying equipment, and other machinery will be installed in the proposed three-story addition to be erected by the United Bakery Corporation, 4830 Drexel Avenue, Kansas City, Mo., estimated to cost $300,000. William M. Campbell is president.

Milwaukee

MILWAUKEE, June 1.

WHILE the volume of local machine tool business during May was not particularly imposing, nevertheless it was comparable to April and prospects for June are equally as good. The call is confined almost entirely to single items. Highly developed automatic machines for specialized pro-

duction are specified in many instances, and tool builders are getting considerable custom work on buyers' designs. Foundries and machine shops gained some ground in the number employed during May, while numerous other lines lost slightly.

The B. Hoffman Mfg. Co., 257 Sixth Street, Milwaukee, manufacturer of plumbing and steam fitting materials, supplies and machinery, has taken over the two-story building, 100 x 200 ft., at Twentieth Street and St. Paul Avenue, formerly occupied by the Milwaukee Structural Steel Co. The Hoffman company is making alterations and will install considerable new equipment in addition to its present layout. Balthasar Hoffman, Jr., is president and general manager.

The Straubel Machine Co., 624 Willow Street, Green Bay, Wis., has started construction on a one-story brick and concrete machine shop addition, 80 x 92 ft., and is in the market for miscellaneous new and used equipment. C. A. Straubel is president and general manager.

The Foyer Motor Co., 921 Teutonia Avenue, Milwaukee, Buick dealer, is taking bids for the construction of a new sales and service building, 50 x 125 ft., part two stories and basement. Plans are by John Menge, Jr., architect, 296 West Water Street, local. The work is estimated to cost about $35,000 complete.

The Quality Brass Co., Port Washington, Wis., has been organized with a capital stock of $25,000 and is preparing to establish a foundry and machine shop for producing soft metal castings. An existing building is to be converted for the purpose. Principals in the enterprise are Frank Chapleau, Christ. J. Miehels and A. A. Chapleau.

The Beloit Buick Co., Beloit, Wis., will build a $50,000 headquarters building and is taking bids through Rosman & Wierdsma, architects, 490 Broadway, Milwaukee, for the erection of a three-story, fire-proof sales and service building, 50 x 120 ft. Work will start about June 15.

The Burlington, Wis., Brass Co. is completing work on a new pattern shop and pattern storage vault, and will convert the present shop into an addition to its administration building.

The E. R. Wagner Mfg. Co., North Milwaukee, Wis., manufacturer of hardware specialties, electro-plated parts and materials, is completing construction work to enlarge the plant and capacity, and contemplates some further extension. The capitalization has been increased to 19,200 shares, consisting of 5600 shares of preferred with a par value of $25; 3600 shares of second preferred with a par value of $100, and 10,000 common shares without par value. E. R. Wagner is president and general manager.

Detroit

DETROIT, June 1.

WORK will soon begin on a three-story addition at the plant of the Belding-Hall Co., Belding, Mich., manufacturer of refrigerators, 100 x 200 ft., for the production of porcelain linings and kindred refrigerator products. It will also erect a two-story extension, 50 x 100 ft.

The Motor Products Corporation, 11801 Mack Avenue, Detroit, has awarded a general contract to Gallagher & Fleming, 6500 Epworth Boulevard, for its one-story addition to cost $85,000. Smith, Hinchman & Gryils, Marquette Building, are architects.

The City Council, Flint, Mich., is arranging to ask bids this month for a one-story municipal sewage pumping plant, estimated to cost $100,000 with machinery. George M. Osborn, City Hall, is city engineer. Frank D. King is city clerk.

The Clemens Sugar Co., Mount Clemens, Mich., will make enlargements and improvements in its mill, including machinery replacements and the installation of additional equipment.

The Board of Education, Birmingham, Mich., plans the installation of manual training equipment in its two-story and basement high school to cost $275,000, for which bids will be asked soon on a general contract. Frederick D. Madison, First State Bank Building, Royal Oak, Mich., is architect.

The Murray Body Corporation, Detroit, has closed arrangements with the Hupp Motor Car Co., for the purchase of its body-manufacturing plant at Racine, Wis., for a consideration of $1,000,000. The Murray company has also contracted with the Hupp organization as exclusive producer of bodies for its cars for five years.

The H. B. Sherman Mfg. Co., Battle Creek, Mich., manufacturer of metal goods, has plans for a one-story addition to be equipped as a foundry and brass finishing works.

A one-story and basement power house, 38 x 68 ft., will be erected at the new parochial school to be built at St. Mary's Boulevard and Grand River Avenue, Detroit, by the St. Mary's Church, to cost $100,000, for which foundations will soon be laid. McGrath, Dohman & Page, Warner and Moore Building, are architects.

Manual training equipment will be installed in the three-story and basement high school to be erected at Marquette, Mich., estimated to cost $500,000, for which bids will be asked soon on a general contract. J. D. Chubb, 109 North Dearborn Street, Chicago, is architect.

The plant and property of the Transport Truck Co., Mount Pleasant, Mich., manufacturer of motor trucks, has been purchased by Edward Greenberg, Mount Pleasant, at a sale in bankruptcy for $65,000. The new owner is reported to be planning to operate the works although no definite announcement has as yet been made.

The Chesterfield Metal Co., Detroit, has purchased the property of the Nelson-Blanck Mfg. Co., Clay Avenue and Dubois Street, Detroit, and the adjoining property amounting to one and a half acres. The Chesterfield company is adding offices and making other repairs to the extent of about $20,000. It will move into the new quarters soon.

The Ontonagon Fibre Co., Ontonagon, Mich., has awarded a contract for the construction of a three-story paper mill, 75 x 140 ft., adjoining its present plant which makes finished pulp.

Pacific Coast

SAN FRANCISCO, May 24.

PLANS are being completed by the Calaveras Cement Co., California Commercial Building, San Francisco, for its proposed mill at San Andreas, Cal., including power house and machine shop, estimated to cost $1,500,000. G. B. Poor is consulting engineer for the company.

The Belmont Shore Development Co., Marsh-Strong Building, Los Angeles, is asking bids until June 16 for equipment for a sewage pumping plant at Naples, Long Beach, Cal. James F. Collins, 242 East Seventh Street, Long Beach, is engineer.

The Los Angeles Gas & Electric Corporation, Los Angeles, is disposing of a bond issue of $2,952,000, a portion of the fund to be used for extensions and improvements in power plants and system.

The Crane Co., 836 South Michigan Avenue, Chicago, is considering plans for a new factory branch and distributing plant at San Bernardino, Cal., where a site, 130 x 179 ft., has been leased. It is estimated to cost $100,000 with equipment.

The Standard Oil Co., Portland, has plans for a new storage and distributing plant at Longview, Wash., with capacity of about 500,000 gal. The main building will be 60 x 200 ft. A pumping plant will be installed. The entire project will cost close to $80,000. J. H. Killian is company engineer.

The Granger Irrigation District, Sunnyside, Wash., is contempating the erection of a new pumping plant, estimated to cost $50,000 with machinery.

The Board of Education, Los Angeles, will build a one-story vocational shop, 52 x 131 ft., at its proposed Robert Louis Stevenson junior high school group at Indiana and Sabina Streets, estimated to cost $350,000. Hunt & Burns, Laughlin Building, are architects.

The Pacific Gas & Electric Co., 445 Sutter Street, San Francisco, is disposing of a bond issue of $10,000,000, a portion of the proceeds to be used for extensions and improvements in power plants and transmission system.

The Philadelphia Storage Battery Co., 37 Spear Street, San Francisco, has plans for a two-story factory, 50 x 150 ft., to cost $45,000. Ashley & Evers, 58 Sutter Street, are architects. Headquarters of the company are at Ontario and C Streets, Philadelphia, Pa.

The General Oil Co., Los Angeles, will proceed with the construction of a new oil storage and distributing works at Astoria, Ore., including pumping plant and other mechanical departments, estimated to cost $100,000 with equipment.

The Beverly Globe Ice Co., Beverly Hills, Los Angeles, will build a new ice-manufacturing plant in connection with an ice cream factory at 1030 Santa Monica Boulevard, two stories, 100 x 300 ft., to cost $100,000 with equipment. Maurice Sasso, I. W. Hellman Building, Los Angeles, is architect.

The Pacific Brass & Hardware Mfg. Co., 1646 North Spring Street, Los Angeles, has awarded contract to John G. Rundstrom, Avenue 66, for a one-story addition, 102 x 136 ft., to cost $20,000 exclusive of equipment. Thorne & Ficker, Western Mutual Life Building, are architects.

Erection of a $35,000 branch warehouse and plant in Los Angeles for the Troy Laundry Machinery Co., whose main plant is at East Moline, Ill., will be started at once

by the Austin Co. of California. The building will be two stories and is expected to be completed about Sept. 1. The company's business in the Southwest has increased so rapidly in recent years that it is planned to begin active manufacturing of laundry machinery in Los Angeles.

For a cash consideration of $550,000, the Atchison, Topeka & Santa Fe Railroad has purchased more than 50 acres east of Los Angeles which will be improved immediately with a roundhouse, ice-making and precooling plant, repair yards and enlargement of classification yards. This step is in line with the Santa Fe's present program of enlarging its terminal facilities at Los Angeles to care for increased business.

Canada

TORONTO, June 1.

MACHINE tool business fell off considerably the past week, with practically the entire demand for single tools. The automotive industry, which has been buying for replacement account, is curtailing purchases. The railroads are well supplied with new tools, although there is a rather steady demand for single machines from this quarter. Very little is being done in the way of new plant construction, and the past week or two has seen a decided slump in announcements relating to erection of new works or additions. The pulp and paper industries continue to buy, and there is a steady demand for electrical equipment for new power development projects.

The St. Lawrence Steel & Wire Co., Gananoque, Ont., has taken over the plant of the Canadian Oakville Co., Hamilton, Ont., and will within the next few weeks move the equipment to Gananoque, where it proposes to add several new lines to those already manufactured.

St. Henri de Faillon, Que., will build waterworks plant and system and is interested in equipment, including pumps, motors, etc.

The Standard Container Co., Ltd., 193 Principale Street, Hull, Que., will build a new factory at Montclair and St. Redempteur Streets to cost $10,000. Machinery and general equipment will be required.

The Procter & Gamble Co., Burlington Street, Hamilton, Ont., will build a $12,000 addition to its factory.

Charles Lapointe, Grandes Bergeronnes, Que., proposes electrical installations to include dynamo, with exciter rotary, 6 reductive transformers and other equipment.

The International Harvester Co. of Canada will build an addition to its plant at Hamilton, Ont., for the manufacture of binder twine and will require from 1000 to 1200 hp. of electric energy for operation.

The Canadian National Railways are building a $500,000 grain elevator at Prince Rupert, B. C. The substructure is now under way and it is proposed to have the elevator completed and ready to handle the 1925 crop.

Gulf States

BIRMINGHAM, June 1.

BIDS will be received by the J. R. Brumby, Jr., commissioner of public works, Sarasota, Fla., until June 15, for equipment for a municipal electric power plant, including two 750 kw. alternators, three-phase, 60-cycle, 2300-volts; two belt-driven exciters connected to two full Diesel oil engines to operate generators; two generator panels and accessory equipment.

The City Council, Nordheim, Tex., plans the installation of pumping equipment in connection with proposed extensions and betterments in the municipal waterworks, estimated to cost $30,000. Terrell Bartlett, Calcasieu Building, San Antonio, Tex., is engineer.

The Plainview Cotton Oil Co., Plainview, Tex., is planning the erection of a new cottonseed oil mill, consisting of three one-story buildings, 68 x 205 ft.; 68 x 158 ft.; and 85 x 265 ft., estimated to cost $60,000. H. F. Whiting, Terrell, Tex., is architect. J. F. Hardaway is manager.

The Common Council, Bartow, Fla., plans extensions and improvements in the municipal electric power house, including the installation of additional machinery. J. E. Childs is city manager, in charge. E. V. Camp and Associates, 1 North Moreland Street, Atlantic, Ga., are engineers.

The Kansas City Southern Railway Co., Kansas City, Mo., is said to have preliminary plans under advisement for extensions and improvements in its yards and shops at Port Arthur, Tex., including the construction of one-story car repair and locomotive shops, to cost $650,000.

J. C. Hamilton, city clerk, Port Arthur, Tex., is asking bids until June 10 for two 50,000-gal. per min. and one 20,000-gal. per min. motor-driven pumping units for municipal drainage service.

The Mississippi Power Co., Gulfport, Miss., has applied for permission to proceed with the development of a proposed hydroelectric power project on the Mississippi River, near Iuka, Miss., designed for an ultimate capacity of 200,000 hp.

The Globe Mills, El Paso, Tex., William E. Keller, president, has preliminary plans for a cottonseed oil mill, with installation to include six hydraulic presses and accessory machinery, estimated to cost $175,000.

W. T. Bidwell, Punta Gorda, Fla., is planning to purchase a quantity of wood-working machinery.

The Common Council, Live Oak, Fla., is said to have tentative plans for the construction of a municipal hydroelectric power plant on the Suwannee River.

The Board of Education, Tuscaloosa, Ala., plans the installation of a manual training department in connection with the remodeling of an existing high school for a junior high school. Bonds for $100,000 for the work will soon be voted.

The Deepwater Refineries, First National Bank Building, Houston, Tex., are said to have concluded negotiations for the purchase of the plant of the La Porte Oil & Refining Co., Morgans Point, Tex., and contemplate extensions and betterments, with additional equipment.

Charles Wilhelm, Naples, N. C., and associates have preliminary plans for the construction of a one-story cold storage and refrigerating plant at Sarasota, Fla., to cost $45,000.

The Ace Septic Tank Co., St. Petersburg, Fla., is considering plans for a new factory to manufacture tanks and kindred products to cost $25,000. R. G. McWilliams heads the company.

The Premier Equipment Corporation, Houston, Tex., has inquiries out for two electric cranes, 15 and 35-tons capacity, respectively.

The Board of Education, Jupiter School District, Jupiter, Fla., plans the installation of manual training equipment in its proposed high school, for which a bond issue of $100,000 will be arranged. The Palm Beach County Board of Public Instruction, West Palm Beach, Fla., is in charge.

Foreign

THE Port Administration, Montevideo, Uruguay, is asking bids until July 20 for two electric traveling cranes, as per specifications. (Correspondence in Spanish).

The South Indian Railway Co., Ltd., Delhi, India, has plans awaiting approval for the electrification and doubling of its lines in the vicinity of Madras. The American Consulate, Bombay, India, E. G. Sabine, assistant trade commissioner, has information regarding the project.

The Mexican Gulf Oil Co., 21 State Street, New York, plans the construction of a pipe line with pumping stations, etc., from Cacalilao to Corcovado, Mex. Storage plants will also be built.

The American Chamber of Commerce in France, 32 Rue Taitbout, Paris, has received an inquiry (L.3064) from a company at Poitiers, France, in the market for machinery for mixing hair and silk, or silk and fiber.

The Foreign Trade Bureau, Philadelphia, has received the following inquiries: (43601) from the Smith Engineering Works, Ghee Kanta Road, Ahmedabad, India, in the market for cotton gins, molding and welding plants, steam, oil and gas engines, hydraulic cotton baling plant, spinning, weaving and humidifying plants and machinery, textile equipment, etc.; (43619) from La Perla del Sur, Sardina y George, S. en C. Santa Cruz 66, Cienfuegos, Cuba, desiring to get in touch with American manufacturers of deep well air pumps, to operate at a depth of about 120 ft.; (43616) from Carlos Cano, Patoni 60, Durango, Mex., wishing to get in touch with American manufacturers of iron and metal chairs and tables, asking catalogs and prices delivered at the Port of Tampico; Julio Pinzon F., Calle 13, No. 236-38, Bogota, Colombia, desiring to get in touch with American manufacturers of corrugated sheet iron for roofing, agricultural machinery and tools, plain sheet iron, barbed wire for fencing, horseshoe nails, plows, shovels and hoes, etc.

The Canadian Atlas Crucible Steel Co., Welland, Ont., has been declared bankrupt and G. T. Clarkson, Toronto, Ont., has been appointed custodian. A meeting of the creditors of the company will be held in the office of Colonel Gwyn, official receiver at the Hamilton courthouse. Liabilities are approximately $700,000, with assets of $550,000. There has been paid into the company by shareholders, $513,675.

Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipments in carload lots from mills, these prices are given for their convenience.

On a number of items the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE, under the general headings of "Iron and Steel Markets" and "Non-Ferrous Metals."

Bars, Shapes and Plates

	Per Lb.
Bars:	
Refined iron bars, base price	3.24c.
Swedish charcoal iron bars, base	7.00c. to 7.25c.
Soft steel bars, base price	3.24c.
Hoops, base price	4.49c.
Bands, base price	3.99c.
Beams and channels, angles and tees, 3 in. x ¼ in. and larger, base	3.34c.
Channels, angles and tees under 3 in. x ¼ in. base	3.24c.
Steel plates, ¼ in. and heavier	3.34c.

Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger	3.30c.
(Smooth finish, 1 to 2½ x ¼ in. and larger)	3.65c.
Toe-calk, ½ x ⅝ in. and larger	4.20c.
Cold-rolled strip, soft and quarter hard	7.00c.
Open-hearth spring steel	4.50c. to 7.00c.
Shafting and Screw Stock:	
Rounds and hex.	4.15c.
Squares and flats	4.65c.
Standard tool steel, base price	15.00c.
Extra tool steel	18.00c.
Special tool steel	23.00c.
High-speed steel, 18 per cent tungsten	70c.

Sheets

Blue Annealed

	Per Lb.
No. 10	3.89c.
No. 12	3.94c.
No. 14	3.99c.
No. 16	4.09c.

Box Annealed—Black

	Soft Steel C. R. One Pass Per Lb.	Blued Stove Pipe Sheet Per Lb.
Nos. 18 to 20	4.15c. to 4.40c.	.....
Nos. 22 and 24	4.20c. to 4.45c.	4.95c.
No. 26	4.25c. to 4.50c.	5.00c.
No. 28*	4.35c. to 4.60c.	5.10c.
No. 30	4.55c. to 4.80c.	.....

Galvanized

	Per Lb.
No. 14	4.45c. to 4.70c.
No. 16	4.60c. to 4.85c.
Nos. 18 and 20	4.75c. to 5.00c.
Nos. 22 and 24	4.90c. to 5.15c.
No. 26	5.05c. to 5.30c.
No. 28*	5.35c. to 5.60c.
No. 30	5.85c. to 6.10c.

*No. 28 lighter, 36 in. wide, 20c. higher per 100 lb.

Welded Pipe

Standard Weld	Black	Galv.	*Wrought Iron*	Black	Galv.
½ in. Butt	46	29	½ in. Butt	4	+19
¾ in. Butt	51	37	¾ in. Butt	11	+ 9
1-3 in. Butt	53	39	1-1½ in. Butt.	14	+ 6
2½-6 in. Lap	48	35	2-in. Lap.	5	+14
7 & 8 in. Lap	44	17	3-6 in. Lap.	11	+ 6
11 & 12 in. Lap.	37	12	7-12 in. Lap	3	+16

Bolts and Screws

Machine bolts, cut thread, 40 and 10 per cent off list
Carriage bolts, cut thread, 30 and 10 per cent off list
Coach screws, 40 and 10 per cent off list
Wood screws, flat head iron, 72½, 25, 10 and 5 per cent off list

Steel Wire

BASE PRICE* ON No. 9 GAGE AND COARSER	Per Lb.
Bright, basic	4.25c.
Annealed, soft	4.50c.
Galvanized, annealed	5.15c.
Coppered, basic	5.15c.
Tinned, soft Bessemer	6.15c.

*Regular extras for lighter gage.

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet	18⅛c. to 19⅛c.
High brass wire	18⅝c. to 19⅝c.
Brass rods	15⅞c. to 16⅞c.
Brass tube, brazed	26⅛c. to 27⅛c.
Brass tube, seamless	22¾c. to 23¼c.
Copper tube, seamless	23¾c. to 24¼c.

Copper Sheets

Sheet copper, hot rolled, 20¾c. to 21¾c. per lb. base.

Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.

Tin Plates

Bright Tin		Coke—14 x 20		
	Grade "AAA" Charcoal 14x20	Grade "A" Charcoal 14x20		Prime	Seconds
			80 lb.	$6.15	$5.90
			90 lb.	6.30	6.05
			100 lb.	6.45	6.20
IC	$11.25	$8.85	IC	6.65	6.40
IX	12.85	10.85	IX	7.85	7.60
IXX	14.40	12.55	IXX	9.00	8.75
IXXX	15.75	13.85	IXXX	10.35	10.10
IXXXX	17.00	15.05	IXXXX	11.35	11.10

Terne Plates

8 lb. coating, 14 x 20

100 lb.	$7.00 to $8.00
IC	7.25 to 8.25
IX	8.25 to 8.75
Fire door stock	9.00 to 10.00

Tin

Straits, pig	60c.
Bar	62c. to 65c.

Copper

Lake ingot	16¾c.
Electrolytic	16½c.
Casting	16 c.

Spelter and Sheet Zinc

Western spelter	9c.
Sheet zinc, No. 9 base, casks	12c. open 12½c.

Lead and Solder*

American pig lead	10c. to 12½c.
Bar lead	13c.
Solder, ½ and ½ guaranteed	39½c.
No. 1 solder	36½c.
Refined solder	30c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.	75c. to 90c.
Commercial grade, per lb.	35c. to 50c.
Grade D, per lb.	25c. to 35c.

Antimony

Asiatic	20c. to 21c.

Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb.	38c.

Old Metals

The market is practically unchanged and business is quiet. Dealers' buying prices are as follows:

	Cents Per Lb.
Copper, heavy crucible	11.50
Copper, heavy wire	11.00
Copper, light bottoms	9.25
Brass, heavy	6.75
Brass, light	5.75
Heavy machine composition	8.75
No. 1 yellow brass turnings	8.00
No. 1 red brass or composition turnings	8.00
Lead, heavy	7.50
Lead, tea	5.75
Zinc	4.00
Cast aluminum	17.00
Sheet aluminum	17.00